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BIOLOGIA CENTRALI-AMERICANA.

AVES.

Vol. III.

(*TEXT.*)

BY

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AND

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ERRATA ET CORRIGENDA.

Page	Line	
41	8	for *Antherina* read *Atherina*.
54		before the heading for the genus ARCHIBUTEO insert Subfam. *AQUILINÆ*.
56	32	*for* p. 20 *read* p. 202.
111		transfer the heading "Group B" to p. 107, so as to include the Subfam. *MICRASTURINÆ*.
136	21	for *californicus* read *californianus*.
159	6	for *Dicromanassa* read *Dichromanassa*.
161	23	for *gazetta* read *garzetta*.
171	40	for *agarni* read *agami*.
207	40	for *M'Leanann* read *M'Leannan*.
270	24	for *Bronn* read *Brown*.
320	11	for *Artamides* read *Aramides*.

BIOLOGIA CENTRALI-AMERICANA.

ZOOLOGIA.

Class AVES.

Subclass AVES CARINATÆ.

Order STRIGES.

The Striges, or Owls, form an isolated group of birds which may be readily recognized. Mainly, no doubt, on account of the shape of the bill and claws, the Striges have been associated with the Accipitres as a suborder of Raptores, and there are other characters to justify this arrangement. In this work we follow, to a great extent, the system of the 'Nomenclator Avium Neotropicalium,' and there the Striges stand as a separate order next to the Accipitres. In the internal arrangement of the order we adhere to the scheme prepared by Sclater and Salvin for the 'Nomenclator,' and published by the former author in 'The Ibis' for 1879 (p. 351).

This order is readily divisible into two families, viz. Strigidæ, represented in America by the genus *Strix*, and Asionidæ by the rest of the Owls.

Fam. STRIGIDÆ.

Sterni crista dilatata, furculam summam attingente; fissuris sterni posticis nullis.

The only genus besides *Strix* belonging to this family is *Phodilus*, containing a single species, *P. badius*, found in the Eastern Himalayas, Ceylon, and thence eastwards to Borneo and Java.

STRIX.

Strix, Linnæus, Syst. Nat. i. p. 131 (partim); Sharpe, Cat. Birds Brit. Mus. ii. p. 290.

The range of the genus *Strix* is nearly worldwide, and only in the colder regions of the north, the islands of Oceania and New Zealand and some of those of the Malay Archipelago, are no species of White Owls found.

Admitting the Old-World forms *S. novæ-hollandiæ*, *S. tenebricosa*, *S. capensis*, and

S. candida as distinct species, there remains the variable *S. flammea*, concerning which much difference of opinion has and does prevail as to whether the bird of the Old World is separable from that of the New, and whether the latter again is divisible into several forms. In the present instance we treat the American bird as distinct from that of Europe; and going beyond our present subject we may state that we believe that *S. punctatissima* of the Galapagos Islands, *S. nigrescens* of the Lesser Antilles, and perhaps *S. furcata* of Jamaica can, as a rule, be readily recognized from the continental bird.

1. Strix perlata.

Strix perlata, Licht. Verz. Doubl. p. 59[1]; Lawr. Ann. Lyc. N. Y. ix. p. 132[2]; v. Frantz. J. f. Orn. 1869, p. 367[3].

Strix pratincola, Bp. Comp. List, p. 7[4]; Scl. P. Z. S. 1859, p. 390[5]; Scl. & Salv. Ibis, 1859, p. 222[6]; Dugès, La Nat. i. p. 138[7]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 270[8]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 163[9]; Herrera, La Nat. (2) i. pp. 178, 321[10]; Bendire, Life Hist. N. Am. Birds, i. p. 325, t. 12. f. 1[11]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 787[12]; Fisher, Bull. U. S. Dept. Agr. no. 9, p. 132, t. 19[13].

Strix flammea, Sharpe, Cat. Birds Brit. Mus. ii. p. 291 (partim)[14]; in Rowley's Orn. Misc. i. p. 263[15]; Boucard, P. Z. S. 1883, p. 456[16].

Strix flammea, var. *pratincola*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 13[17]; Lawr. Mem. Bost. Soc. N. H. ii. p. 298[18]; Bull. U. S. Nat. Mus. no. 4, p. 38[19]; Sumichrast, La Nat. v. p. 238[20].

Strix flammea, var. *guatemalæ*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 11[21].

Strix flammea guatemalæ, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125[22]; Cherrie, Auk, 1892, p. 327[23]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 520[24].

Supra cervina, nigricanti-griseo et albo minutissime irrorata, plumis singulis macula elongata medialiter alba terminata, facie alba, oculorum ambitu rufescente, margine faciali nigricanti-rufo: subtus alba, cervino plerumque lavata, nigricante guttato, plumis singulis medialiter biguttatis; alis subtus albis, primariis ad apicem nigricante irroratis et in dimidio distali nigricante fasciatis; cauda supra pallide cervina, fasciis quatuor indistinctis notata inter eas fusco irrorata. Long. tota circa 15·5, alæ 13·0, caudæ 5·8, tarsi 2·9. (Descr. exempl. ex San Gerónimo, Guatemala. Mus. nostr.)

Hab. North America, Temperate and Southern States.—Mexico, Presidio de Mazatlan (*Forrer*), Tres Marias Is. (*Grayson*[8 18]), Rio Ameria (*Xantus*[18]), Aguas Calientes (*W. B. Richardson*), Agua Azul near Guadalajara (*Jouy*[12]), Arozo Hondo, Gudalajara (*Dr. A. C. Buller, in mus. Rothschild*), Guanajuato, Guadalajara (*Dugès*[7]), Valley of Mexico (*Herrera*[10]), Mexicalcingo, Llano de Chapulco[9], Forres de la Catedral de Puebla[9], Chietla[9] (*Ferrari-Perez*), Orizaba (*Sumichrast*[20]), Oaxaca (*Boucard*[5], *M. Trujillo*), Cacoprieto[20], Tehuantepec city[19], Tonala[20] (*Sumichrast*), Izamal[16], Tizimin[16], Calotmul in Yucatan (*G. F. Gaumer*); Guatemala (*Skinner*[6]), Dueñas, San Gerónimo (*O. S. & F. D. G.*); Salvador (*U.S. Nat. Mus.*); Nicaragua (*J. M. Dow, in U.S. Nat. Mus.*[21]), San Carlos (*W. B. Richardson*), Chinandega (*Hicks, in U.S. Nat. Mus.*[21]), R. Escondido (*Richmond*[24]); Costa Rica[3]

(*Boucard*), San José (*v. Frantzius* [2], *Zeledon* [22], *Cherrie* [23]); Panama (*Arcé, in Mus. Brit.*).—South America generally to Brazil, Argentina and Chili [14].

Like the rest of the world, Mexico and Central America have their White Owl, which is a fairly common bird throughout the country, and probably resident wherever it is found. Its habits are doubtless so like those of the bird of the Old World and of North America generally, so admirably described by Capt. Bendire [11] and Dr. A. K. Fisher [13], that an account of them need not be repeated here. Its food, according to Dr. Fisher, consists, to a very large extent, of mice and other small mammals, in a few cases of locusts, grasshoppers, and other insects, and in a still fewer of small birds.

Strix flammea, in a wide sense, is a notoriously variable bird, and few authorities agree as to the extent to which local races should be recognized. Dr. Sharpe, in his elaborate paper published in Rowley's 'Ornithological Miscellany,' went further than his predecessors in uniting all but the most marked forms under the general title of *Strix flammea*. American authors usually employ Bonaparte's name, *S. flammea pratincola*, for the North-American bird, tracing its range to Mexico. In Guatemala and the rest of Central America the form is distinguished as *S. flammea guatemalæ*, and the South-American as *S. flammea perlata*. Colour and size are the differential characters selected; these are most variable and, so far as we can see, only localized to a very partial extent. The large series before us shows that Mexican birds are, like those of California, white-breasted individuals, those with the underparts fawn-colour occurring in about equal numbers. In Guatemala birds with fawn-coloured breasts are rather more common, and all are more or less tinged with this colour. In Costa Rica all are fawn-coloured; and one Panama bird resembles another from the Cauca Valley, Colombia, in having a few cross-bands on the breast, thus showing a tendency to the colour of the bird of the island of Hispaniola. In size the Mexican birds have a rather larger average, those of the rest of Central America being less, the South-American bird being the smallest of the continental forms.

For the American bird generally we use the oldest name, *Strix perlata*, applied by Lichtenstein to the *Strix* of Brazil [1]. We adopt this course as perhaps the most convenient, but admit that it seems hardly possible to state any character or characters by which all American birds can be distinguished from *Strix flammea* of the Old World.

Fam. ASIONIDÆ.

Sterni crista angusta, furculam summam haud attingente; fissuris sterni utrinque duabus.

Eighteen genera are included in this family, which are distributed over nearly the whole world, every continent, every large island, and a great number of small ones including one or more Owls amongst their birds. In America thirteen genera are found, of which *Nyctea* and *Surnia* are boreal, and do not come within our limits, and of the

rest *Gymnasio* is purely Antillean. The remaining ten are all well represented. Of these *Asio*, *Syrnium*, *Bubo*, *Scops*, *Speotyto*, and *Glaucidium* are common to both northern and southern continents as well as the intermediate region, and all of them, except *Speotyto*, have a wide range in the Old World. *Micropallas* belongs to the border States both of the north and of Mexico, and *Nyctala* is a northern form, occurring within our limits. The remaining two, *Lophostrix* and *Ciccaba*, occur also in South America, on which continent no peculiar genus is found.

The number of species of Asionidæ was computed in 1875 by Dr. Sharpe at 184, but since then the existence of others has been ascertained, so that the total now will not be far short of 220. Of these thirty-two are found within our limits.

Aures operculo præditæ.

Cornuti.

ASIO.

Asio, Brisson, Orn. i. p. 28 (1760); Sharpe, Cat. Birds Brit. Mus. ii. p. 225.
Otus, Cuv. Leç. Anat. Comp. t. ii.
Nyctalops, Wagl. Isis, 1832, p. 1221.
Brachyotus, Gould, P. Z. S. 1837, p. 10.

Of the eight or nine species of *Asio*, four are found within our limits. Of these *A. wilsonianus*, a northern bird not strongly defined from the Old World *A. otus*, just enters Mexico; *A. accipitrinus* is almost worldwide, and is found throughout America both north and south. The other two species, *A. stygius* and *A. clamator*, are both South-American species, the former not passing the limits of Mexico, and the latter not found beyond the State of Panama.

The very large ear-opening overhung by a sort of operculum distinguishes *Asio*, *Syrnium*, and *Nyctala* from the rest of the Owls of this subfamily, and the feathery ear-tufts separate *Asio* from the other two.

1. Asio wilsonianus.

Strix otus, Wils. Am. Orn. vi. p. 73, t. 51. f. 3 (nec Linn.)[1].
Otus americanus, Steph. in Shaw's Gen. Zool. xiii. pt. 2, p. 57[2].
Asio americanus, Sharpe, Cat. Birds Brit. Mus. ii. p. 229[3]; Sumichrast, La Nat. v. p. 237[4].
Otus wilsonianus, Less. Traité d'Orn. p. 110[5].
Asio wilsonianus, A. O. U. Check-list N. Am. Birds, ed. 2, p. 146[6]; Herrera, La Nat. (2) i. pp. 178, 321[7]; Allen, Bull. Am. Mus. N. H. v. p. 34[8]; Bendire, Life Hist. N. Am. Birds, i. p. 328, t. 12. f. 2[9]; Fisher, Bull. U. S. Dep. Agr. no. 9, p. 140, t. 20[10].
Otus vulgaris, var. *wilsonianus*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 18[11].

Supra fusco-nigricans, cervino-albido undique irroratus: subtus cervino-albidus, plumis singulis rhachidibus anguste et fasciis duabus aut tribus fuscis notatis; loris et mento albis, genis et regione postoculari fulvis; alis cervinis fusco late fasciatis, tectricibus subalaribus majoribus cervinis fusco terminatis; tarsis

et digitis plumosis cervinis. Long. tota circa 14·0, alæ 11·5, caudæ 6·0, tarsi 1·6. (Descr. maris ex Santa Izabel, Chihuahua, Mexico. Mus. nostr.)

Hab. North America, temperate districts [6 11].—Mexico, San Diego, Sonora (*Robinette* [8]), Santa Izabel and Carretas in Chihuahua (*W. Lloyd*), Valley of Mexico (*Sumichrast* [4], *Herrera* [7]), Mexicalcingo (*Ferrari-Perez*), Orizaba (*Sumichrast* [4]).

The American Long-eared Owl represents in North America *Asio otus* of the temperate regions of the Old World, the two birds being much alike. They may readily be distinguished by the distinct stripes of the upper plumage of *A. otus* in contrast with the more irregular mottling of the same part in *A. wilsonianus*. The dark shafts of the feathers on the under surface of the latter bird are much narrower than those of the former.

A. wilsonianus is a well-known bird in all parts of the United States, breeding wherever it is found, laying from three to seven white eggs in the deserted nests of Crows, Magpies, Herons, or other nests of sufficient size. In Mexico its range is chiefly confined to the northern and central portions of the country. Two specimens sent us by Mr. William Lloyd from Chihuahua were obtained one in January and one in February. The species was also met with by Mr. Robinette when he was with the Lumholtz Expedition in 1890–92. Of more southern records we have but few; both Sumichrast [4] and Herrera [7] record its occurrence in the Valley of Mexico, and the former naturalist found it near Orizaba, but we have seen no specimens from either district. Neither Sallé nor Boucard or any of our collectors appear to have met with this Owl.

The life-history of the American Long-eared Owl, as this bird is called in North America, has been fully given by Capt. Bendire [9] and Dr. Fisher [10], and the latter author has drawn up statistics showing the nature of the food consumed by this Owl. From this it appears that mice and a few other mammals form by far the largest proportion of its diet; a few birds are eaten and occasionally insects.

2. **Asio clamator.**

? *Strix mexicanus*, Gm. Syst. Nat. i. p. 288 ? [1]
Bubo clamator, Vieill. Ois. Am. Sept. i. p. 52, t. 20
Asio clamator, Berl. & Stolzm. P. Z. S. 1892, p. 387 [3].
Otus mexicanus, Pelz. Orn. Bras. p. 10 [4].
Bubo mexicanus, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 61 [5].
Asio mexicanus, Sharpe, Cat. Birds Brit. Mus. ii. p. 231 [6].

Supra cervinus, fusco irroratus, plumis singulis late fuscis: subtus cervinus, plumis omnibus stria rhachidali nigricante nullo modo transfasciatis; facie tota albida nigro circumcincta, dimidio plumarum terminali late fusco transfasciato; cauda cervina, fusco transfasciata. Long. tota circa 14·0, alæ 9·3, caudæ 5·3, tarsi 2·1. (Descr. exempl. ex Paraiso, Panama. Mus. nostr.)

Hab. Panama (*Arcé, in Mus. Brit.*[6]), Paraiso Station (*A. Hughes*).—South America generally [6]; Peru [3].

This Owl has usually passed under Gmelin's name *Strix mexicanus*, which was

founded upon the "Tecolotl" of Hernandez, a Mexican bird. But, as Count von Berlepsch and Herr Stolzmann[3] have pointed out, the description of Hernandez is altogether insufficient for recognition, and perhaps refers to *Bubo virginianus*; they therefore reject Gmelin's title and employ that of Vieillot for this Owl. We may add that there is no evidence at present that *Asio clamator* occurs anywhere near Mexico, for, though widely spread in South America, we have not traced it beyond the State of Panama in its range northwards.

Some difference of opinion exists as to the position of this species—whether it should stand in the genus *Bubo*, as Mr. Ridgway holds, or in *Asio*, as Dr. Sharpe and Count von Berlepsch maintain. The form of the ear-opening, we think, decides this question in favour of the latter view, as the ears are quite as large as in *Asio wilsonianus* or *A. accipitrinus*, and not comparatively small as in *Bubo virginianus*.

Asio clamator, though provided with long ear-tufts, can be readily distinguished from *A. wilsonianus* by its shorter wings and by the absence of any transverse dark marks on the feathers of the under surface, the shafts alone being conspicuous. In this latter respect it resembles *A. accipitrinus*, from which, again, it differs in its long ear-tufts and other characters.

As already stated, *A. clamator* only just enters our fauna. We have a specimen sent us by Hughes from Paraiso Station on the Line of the Panama Railway, and there is another in the British Museum which was obtained by Arcé in one of his later collections. Southwards of this it occurs over the greater part of the continent as far as Uruguay.

Specimens seem to vary considerably in size, and the large bird of Monte Video was called *Otus midas* by Schlegel, who adopted a name of Lichtenstein's. This variation in size is also referred to by Count von Berlepsch[3], but he reserved giving a definite opinion on the subject for want of more specimens.

3. **Asio stygius.**

Nyctalops stygius, Wagl. Isis, 1832, p. 1221[1].
Otus stygius, Pelz. Orn. Bras. p. 10[2]; Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 17[3].
Asio stygius, Sharpe, Cat. Birds Brit. Mus. ii. p. 241[4].
Otus siagupa, d'Orb. in R. de la Sagra's Hist. Cuba, iii. p. 40, t. 2[5]; Gundl. Orn. Cub. p. 50[6].

Supra saturate fuscus, sparsim cervino irroratus, plumis cervicis posticæ lateraliter cervino maculatis: subtus cervino-albidus, plumis omnibus medialiter fuscis, eis abdominis quoque bi- aut trifasciatis; loris fuscis, facie sordide fusco-albida; alis fuscis, ad basin cervino variegatis et in pogonio interno nonunquam cervino maculatis; cauda fusca, cervino maculata; tarsis cervinis, fusco punctatis; digitis nudis, sparsim setosis. Long. tota circa 16·5, alæ 13·7, caudæ 6·7, tarsi 2·15. (Descr. maris ex San Rafael del Norte, Nicaragua. Mus. nostr.)

Hab. Mexico; Nicaragua, San Rafael del Norte (*W. B. Richardson*). — Colombia; Guiana, Amazons[2]; Brazil[1 2]; Cuba[5 6].

Little is known of this remarkable species, which is quite distinct from all other American Owls, its large size and dark colour rendering it easily recognizable.

Very few specimens have come under our observation. It was described by Wagler in 1832 from a bird ascribed to Brazil or South Africa; the latter locality being no doubt erroneous. The only specimen that we have received from within our limits is one recently sent us by Mr. Richardson from Nicaragua, where he obtained it near San Rafael in the mountains of Matagalpa, in the central part of the country.

In South America *A. stygius* has been found at various widely remote places. In the British Museum birds from Colombia, British Guiana, and Brazil are now to be seen. In the Vienna Museum there were eight specimens when Von Pelzeln wrote his 'Ornithologie Brasiliens' [2], most of which were obtained by Natterer during his travels in Brazil, some of them in the southern provinces, some in the valley of the Amazons or those of the Madeira and Rio Negro.

In the island of Cuba it would appear to be more abundant, as Gundlach tells us that he obtained many individuals of all ages, though he never found a nest [6]. Those that he met with by day were resting on a branch of a tree in thick foliage, generally in the woods, but sometimes in fruit-trees on the outskirts.

The cry resembles the syllable *hū*, which can be heard at some distance, though not penetrating, and inspires terror among superstitious people. The food of this Owl consists of mice and birds, and probably reptiles and larger insects.

4. Asio accipitrinus.

Stryx accipitrina, Pall. Reise Russ. Reichs, i. p. 455 [1].

Asio accipitrinus, Newton, in Yarr. Brit. Birds, ed. 4, i. p. 163 [2]; Sharpe, Cat. Birds Brit. Mus. ii. p. 234 [3]; Sumichrast, La Nat. v. p. 237 [4]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 164 [5]; Herrera, La Nat. (2) i. pp. 178, 321 [6]; Bendire, Life Hist. N. Am. Birds, i. p. 332, t. 12. f. 3 [7]; Fisher, Bull. U. S. Dep. Agr. no. 9, p. 145, t. 21 [8].

Strix brachyotus, Forst. Phil. Trans. lxii. p. 384 [9].

Otus brachyotus, Scl. P. Z. S. 1857, p. 212 [10].

Otus (*Brachyotus*) *brachyotus*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 22 [11].

Brachyotus cassini, Brewer, N. Am. Ool. i. p. 68 [12]; Scl. P. Z. S. 1859, p. 390 [13]; Salv. Ibis, 1866, p. 196 [14]; Gundl. Orn. Cub. p. 51 [15].

Supra fuscus, cervino variegatus; subtus cervinus, fusco striatus; loris et mento albis, oculorum ambitu fusco, genis fusco striatis; alis ad basin cervinis, ad apicem fuscis, tectricibus subalaribus majoribus fusco terminatis; tarsis et digitis plumosis cervinis; cauda fusco et cervino transfasciata. Long. tota circa 14·0, alæ 12·6, caudæ 6·0, tarsi 1·8. (Descr. exempl. ex Volcan de Agua, Guatemala. Mus. nostr.)

Hab. Temperate and tropical regions of nearly the whole world [11]; North America generally, from the Arctic Regions southwards [11].—Mexico, Guadalajara (*Dr. A. C. Buller, in mus. Rothschild*), Valley of Mexico (*Sumichrast* [4], *Herrera* [6]), Chapulco, Llano de San Baltazar (*Ferrari-Perez* [5]), Orizaba (*Botteri* [10]), Oaxaca (*Boucard* [13]);

GUATEMALA, Volcan de Agua (*O. S. & F. D. G.* [14]).—SOUTH AMERICA generally, to Chili and the Falkland Islands [3]; CUBA [15]; PUERTO RICO [11].

It is now generally admitted that *Asio accipitrinus* is incapable of being divided into races, notwithstanding its very extensive range; and that the *Otus cassini* of Brewer, by which name the American bird was sought to be distinguished, has no definite characters to separate it from the Old-World bird.

The habits of this Owl have been described in many works, and there is no need to repeat them here; suffice it to say that its occurrence in grassy tracts of any extent may be looked for, but it is very uncertain in its movements. The only specimens we obtained during our visits to Guatemala were two brought us by Indians, who said they shot them in the rough grass which, with scattered pines, covers the upper portion of the Volcan de Agua above an elevation of 10,000 feet, the limit of the forest of mixed trees.

We find no records of its occurrence in any other part of Central America, but it has been traced through a great part of South America from Colombia to the Falkland Islands.

The late Captain Bendire's account of the Short-eared Owl in North America is one of the most recent and complete, and should be read [7]. Dr. Fisher's work should also be consulted [8]. The last-named author examined the food of upwards of 100 individuals, and found it to consist chiefly of mice and other small mammals; a few small birds were consumed and some insects.

Non cornuti.

SYRNIUM.

Syrnium, Savigny, Syst. Ois. Egypte, p. 9 (1810); Sharpe, Cat. Birds Brit. Mus. ii. p. 244 (partim).

Dr. Sharpe united *Ciccaba* with *Syrnium* in his 'Catalogue of Birds in the British Museum,' but we doubt the correctness of this view, and we revert to the arrangement of the 'Nomenclator Avium Neotropicalium,' in which the species with a large ear-orifice (*Syrnium*) are kept quite distinct from those which have a small ear-opening (*Ciccaba*), both genera being without any trace of feathered ear-tufts.

Thus restricted *Syrnium* is represented in our region by three species, all of them of northern affinity and allied to the well-known Barred Owl of North America, *Syrnium nebulosum*, which takes the place of *S. aluco* of Europe, though not nearly allied.

Two of the three species are found in Mexico and one in Guatemala, but the genus is unrepresented in the other Central-American republics.

1. Syrnium sartorii.

Syrnium nebulosum, Scl. P. Z. S. 1858, p. 295 [1]; Sumichrast, La Nat. v. p. 237 [2]; Herrera, La Nat. (ser. 2) i. pp. 178, 321 [3].

Syrnium nebulosum, var. *sartorii*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 29 [4].

Syrnium nebulosum sartorii, Ridgw. Man. N. Am. Birds, ed. 2, p. 258 [5].

Supra fuscum, albido frequenter fasciatum; facie albida, fusco indistincte fasciata: subtus album, usque ad imum pectus fusco fasciatum, abdomine distincte fusco striato; alis fuscis, albo fasciatis; cauda fusca, fasciis sex albidis angustis notata; tibiis albidis. Long. tota circa 19·0, alæ 14·5, caudæ 9·0. (Descr. maris ex Autlan, Jalisco, Mexico. Mus. nostr.)

Hab. Mexico, Ciudad in Durango (*Forrer*), Cerro Viejo Jojolitan, Sierra de Cuyutlan, Colonia Brizuela near Autlan in Jalisco (*A. C. Buller*), Monte Alto (*Sumichrast* [2]), Valley of Mexico (*Herrera* [3]), La Parada (*Boucard* [1]), Mirador (*Sartorius* [4]).

This Owl is the Mexican representative of the common Barred Owl of North America, *Syrnium nebulosum* (Forst.). It was described by Mr. Ridgway [4] from a specimen sent to the United States National Museum by Dr. Sartorius from Mirador, on the Atlantic slope of the mountains of Vera Cruz, not far from Huatusco. We have no further evidence of its occurrence in that region, but it is apparently not uncommon in Western Mexico, where the late Dr. A. C. Buller obtained several examples in the State of Jalisco, and where Mr. Forrer found it in the mountains between Durango and the Pacific Ocean. It is in all probability this bird, and not the true *S. nebulosum*, that is referred to by Sumichrast [2] and Herrera [3] as occurring in the Valley of Mexico.

S. sartorii may be readily distinguished from *S. nebulosum* by the darker colour of its markings, which are, as Mr. Ridgway says, of a blackish sepia on a white ground, instead of reddish umber on an ochreous-white ground, the face being almost destitute of darker concentric rings.

The habits of this Owl doubtless resemble those of the Barred Owl of North America, which have been recently fully described by Capt. Bendire and Dr. Fisher, and its food analyzed and found to consist to a great extent of mice and a few other small mammals, a few birds, insects, and even frogs, fish, and crustacea.

2. Syrnium fulvescens. (Tab. LXI.)

Syrnium nebulosum, Scl. & Salv. Ibis, 1859, p. 221 (nec Forst.) [1].

Syrnium fulvescens, Scl. & Salv. P. Z. S. 1868, p. 58 [2]; Sharpe, Cat. Birds Brit. Mus. ii. p. 258 [3]; Salv. Cat. Strickl. Coll. p. 480 [4].

Syrnium nebulosum, var. *fulvescens*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 29 [5].

Supra chocolatino-brunneum, fulvo transfasciatum et maculatum; disci facialis plumis albis, fulvo et nigro variegatis; alarum tectricibus minoribus in pogonio externo maculis rotundis albis distincte notatis; alis caudaque brunneis, fulvo transfasciatis: subtus fulvum, in pectore albicans brunneo frequenter transfasciatum; ventre pallide fulvescenti-albido, fulvo strigato; crisso immaculato; tectricibus subalaribus pallide fulvis; tarsis cum digitorum phalangibus primis dense vestitis plumis fulvis, nigricante punctu-

latis: rostro clare fulvo; digitis nudis, carneis, unguibus nigris. Long. tota circa 16·0, alæ 12·5, caudæ 7·3, tarsi 2·2. (Descr. exempl. ex Guatemala. Mus. nostr.)

Hab. GUATEMALA (*Constancia* [4]), near Antigua Guatemala (*Constancia* [3]), Cahabon (*Skinner* [1 2]), Dueñas, Volcan de Fuego (*O. S. & F. D. G.*), Volcan de Tacana (*W. B. Richardson*).

Guatemala specimens of this *Syrnium* in our collection were first described in 1868, but examples had long previously been sent to Europe from that country. Besides the specimen in the Norwich Museum from Cahabon mentioned in the first list of Guatemala birds [1], one was sent to Strickland by Constancia from the same country in 1845, and is now in the Cambridge Museum [4]. It is nowhere abundant in Guatemala, though examples were brought in from time to time during our stay there, mostly from the wooded slopes of the Volcan de Fuego, from altitudes between 7000 and 8000 feet above the sea. The last specimen that reached us was from Mr. Richardson, who shot it on the Volcan de Tacana, just on the frontier of the Mexican State of Chiapas. The bird no doubt occurs in that State, but not perhaps beyond the Isthmus of Tehuantepec *.

S. fulvescens can readily be distinguished from its northern allies, *S. sartorii* and *S. nebulosum*, by its smaller size and by the rich tawny-brown tint of its plumage, and by the toes being naked except just at the base. As a species it seems quite distinct, though treated as a subspecies by some American authors [5]. We have never seen a bird showing a trace of intermediate characters between it and *S. sartorii*.

The iris in life is dark and the toes yellow.

3. **Syrnium occidentale.**

Syrnium occidentale, Xantus, Pr. Ac. Phil. 1859, p. 193 [1]; Baird, Birds N. Am., Atl. p. v, t. 66 [2]; Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 38 [3]; Sharpe, Cat. Birds Brit. Mus. ii. p. 260 [4]; Bendire, Life Hist. N. Am. Birds, i. p. 343 [5]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 156 [6].

Supra fusco-brunneum, albo fasciatum et maculatum; facie griseo-albida, indistincte fusco fasciata: subtus fusco-brunneum, undique albo fasciatum et guttatum; plumis abdominis singulis maculis magnis tribus utrinque albis ad rhachidem approximantibus, haud attingentibus; alis fuscis, sordide albo fasciatis; cauda fusca, septies albido anguste transfasciata; digitis plumosis. Long. tota circa 16·5, alæ 12·0, caudæ 8·0, tarsi 2·2. (Descr. maris ex "Big Trees," California. Mus. nostr.)

Hab. NORTH AMERICA, California [1 2], New Mexico [5], Arizona [5], &c.—MEXICO (*Mus. Brit.*[4]), Guanajuato (*fide Bendire* [5]).

Syrnium occidentale can be readily distinguished from *S. nebulosum* and its allies by the lower part of the under surface being barred transversely instead of longitu-

* A specimen in the Norwich Museum is said to be from Mexico. It was obtained from Gould, who most likely received it from Skinner, and therefore from Guatemala.

dinally streaked, and by the head and neck being marked with roundish spots and not with transverse bars.

The original specimen described by Xantus in 1859 was obtained near Fort Tejon, California [1], but only recently has its range been traced over the adjoining States forming the southern portion of the Middle Province of North America to Arizona and Lower California, States joining our northern border. The evidence of its occurrence in Mexico is not very complete. The British Museum contains an example said to be from that country, but it was acquired from a dealer in 1866. Captain Bendire, however, states precisely [5], without giving his authorities, that it occurs over the higher tablelands of Mexico to Guanajuato in lat. 21° N. In his work also will be found the fullest account of the habits of this Owl, so far as then known. Dr. Fisher also gives a summary of the published notes concerning it [6]. These all refer to birds found beyond our border.

NYCTALA.

Nyctala, Brehm, Isis, 1828, p. 1271 ; Sharpe, Cat. Birds Brit. Mus. ii. p. 284.

Nyctala is a northern genus containing two species, one of which, *N. tengmalmi*, is found in the northern parts of the Old World and in similar regions in the New; the other, *N. acadica*, is strictly a bird of North America, extending its range through Mexico to Guatemala. Both are small Owls with peculiarly silky plumage, without feathered ear-tufts, but with the osseous portion of the skull about the ears curiously asymmetrical, one side being much more swollen than the other. The toes are densely feathered to the base of the claws.

1. Nyctala acadica.

Acadian Owl, Lath. Gen. Syn. i. p. 149, t. 5. f. 2 [1].

Strix acadica, Gm. Syst. Nat. i. p. 296 [2].

Nyctala acadica, Scl. P. Z. S. 1858, p. 295 [3]; Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 43 [4]; Sharpe, Cat. Birds Brit. Mus. ii. p. 287 [5]; Bendire, Life Hist. N. Am. Birds, i. p. 350, t. 12. f. 7 [6]; Fisher, Bull. U. S. Dep. Agr. no. 9, p. 160 [7].

Supra brunnea, capite summo albo striato ; scapularibus extrorsum albo maculatis, tectricibus alarum mediis et primariis extus albo maculatis, facie alba : subtus alba rufo maculata, tibiis rufescenti-albis ; cauda fusca, fasciis indistinctis albis notata. Long. tota circa 7·5, alæ 5·6, caudæ 2·65, tarsi 1·0. (Descr. exempl. ex Chimalpa, Mexico. Mus. nostr.)

Juv. Supra brunnea unicolor ; subtus usque ad imum pectus quoque brunnea, abdomine toto pallidiore ; tectricibus auricularibus nigricanti-brunneis ; fronte, superciliis et macula utrinque rictali albis ; scapularibus cervino maculatis ; alis albo maculatis ; cauda nigricante, albo bifasciata.

Hab. North America, Canada and Northern States, Mountains of Western and South-western States [4].—Mexico, Chimalpa in the Valley of Mexico (*Ferrari-Perez*), Cinco Señores (*Boucard* [3]) ; Guatemala, Quezaltenango (*O. S.*).

Though a common and well-known bird in North America and fully described by American authors, but little is known of this Owl in Mexico or Central America.

M. Boucard obtained a specimen at Cinco Señores in Oaxaca, as recorded by Mr. Sclater in 1858[3], and since then Don F. Ferrari-Perez secured one at Chimalpa in the Valley of Mexico: these are the only two records we have of the existence of the species in Mexico; and though it no doubt occurs throughout the mountain regions of Central Mexico, it appears to have escaped the notice of Sumichrast and Herrera. In Guatemala still less is known of it, for a stuffed specimen in a small collection of birds made by Don Valentin Escobar in the neighbourhood of Quezaltenango, which Salvin examined in the city of Guatemala in July 1873, is the only one we have seen from that country. This bird was in the young brown plumage with white eyebrows, formerly known as *N. albifrons*. *N. acadica* has never been seen southward of Guatemala.

From Dr. Fisher's analysis of the food of this Owl[7], it would appear to consist to a large extent of mice, and only occasionally of small birds and insects.

Aurium operculo nullo.

Cornuti.

BUBO.

Bubo, Cuvier, Règne Anim. 1817, p. 331; Sharpe, Cat. Birds Brit. Mus. ii. p. 12.

The range of *Bubo* is very extensive, and includes the greater part of the world, except Australia, New Zealand, Oceania, New Guinea, and the Moluccas. Of the seventeen or eighteen species distributed over this wide area, only three closely allied forms occur in America, of which *B. virginianus* is by far the commonest and most widely dispersed, being found alike in North, Central, and South America, and in the latter countries it is by far the largest of the Striges.

The ear-tufts are large and conspicuous in *Bubo*, the cere of the bill is not tumid, the nostrils oval and placed at the margin of the cere, the wings are comparatively short, not reaching to the end of the tail, and the tarsi are always densely feathered at least to the base of the toes, and in the case of *B. virginianus* the toes also are densely feathered.

1. Bubo virginianus.

Great Horned Owl, Edwards, Nat. Hist. Birds, ii. t. 60[1].

Strix virginiana, Gm. Syst. Nat. i. p. 287[2].

Bubo virginianus, Scl. P. Z. S. 1859, p. 390[3]; 1860, p. 253[4]; Scl. & Salv. 1860, p. 276[5]; Salv. P. Z. S. 1870, p. 216[6]; Cat. Strickl. Coll. p. 472[7]; Lawr. Ann. Lyc. N. Y. ix. pp. 132[8], 207[9]; Bull. U. S. Nat. Mus. no. 4, p. 37[10]; Dugès, La Nat. i. p. 138[11]; v. Frantz. J. f. Orn. 1869, p. 366[12]; Sharpe, Cat. Birds Brit. Mus. ii. p. 19[13]; Sumichrast, La Nat. v. p. 237[14]; Herrera, La Nat. (2) i. pp. 178, 321[15]; Bendire, Life Hist. N. Am. Birds, i. p. 376, t. 12. f. 12[16]; Fisher, Bull. U. S. Dep. Agr. no. 9, p. 174, t. 24[17].

Bubo virginianus, var. *virginianus*, &c., Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 62[18].

Bubo virginianus subarcticus, Allen, Bull. Am. Mus. N. H. v. p. 34[19]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 787[20].

Supra sordide cervinus, fusco fasciatus et irregulariter irroratus; capite summo nigricantiore, plumis auricularibus elongatis et margine faciei postico nigris, loris et mento albidis: subtus albus, nigro frequenter transfasciatus, gutture albo ad pectus nigro marginato; alis griseo-fuscis, fasciis griseis fusco irroratis notatis; cauda sordide cervina, fusco irrorata et fasciis fuscis notata; tibiis cervino-albidis, fusco crebre fasciatis; subalaribus cervino-albis, nigro maculatis: rostro plumbeo, digitis plumosis. Long. tota circa 20·0, alæ 13·5, caudæ 7·7, tarsi 2·5. (Descr. maris ex Dueñas, Guatemala. Mus. nostr.)

Hab. North America generally.—Mexico, Tamaulipas (*Berlandier*[18]), Hermosillo in Sonora (*Ferrari-Perez*), San Diego (*Robinette*[19]), Ciudad in Durango (*Forrer*), Sierra del Rosario, Ixtlan, Rancho el Zapote, La Venta del Astillero in Jalisco (*Dr. A. C. Buller, in mus. Rothschild*), Hacienda de San Marcos in Jalisco (*W. Lloyd*), Guanajuato (*Dugès*[11]), Guadalajara (*Dugès*[11], *Jouy*[20]), Volcan de Colima (*W. Lloyd*), Valley of Mexico (*Herrera*[15]), Coajimalpa (*Ferrari-Perez*), Chapultepec, Monte Alto, San Rafael, Angangueo, Orizaba[20] (*Sumichrast*[14]), Vera Cruz (*Sallé*[4]), Oaxaca (*Boucard*[3]), Cacoprieto[14], Tehuantepec[10 14] (*Sumichrast*), Buctzotz in N. Yucatan (*G. F. Gaumer*), Merida (*Schott*[9]); Guatemala (*Constancia*[7]), Dueñas, San Gerónimo (*O. S. & F. D. G.*[5]); Nicaragua, Matagalpa (*W. B. Richardson*); Costa Rica, San José (*Von Frantzius*[8 12]); Panama, Chitra (*Arcé*[6]).—South America, Guiana, Ecuador.

Though the Great Horned Owl of Western Mexico and the tablelands has been separated as a race from the Eastern bird by recent American writers, our series shows that there is practically no difference and that all are inseparable from the common bird of the Eastern States of America, *Bubo virginianus*. The bird of the Western United States has been called *B. virginianus subarcticus*, a name now said to apply to the race called *B. virginianus arcticus* of Swainson, a northern bird remarkable for its lighter greyer colour, with which none of our Mexican specimens agree.

The range of *B. virginianus* throughout Mexico and Central America is probably universal from the sea-level to a height of 7000 or 8000 feet in the mountains. We constantly met with Owls of this species in Guatemala, and at certain seasons their deep-toned cry might be heard nightly. A favourite locality frequented by them was a wooded hill-side, skirting the plain of Dueñas, not far from the village. Here they lived amongst low trees which covered the slope except where a rocky precipice intervened. The plumage of several birds obtained by us in Guatemala was strongly tainted with the odour of the skunk, showing that these animals are attacked, if not killed and eaten, by these powerful Owls.

Captain Bendire[16] and Dr. Fisher[17] have recently given full accounts of this species as observed in the United States, and the latter author gives an analysis of the food of many dissected birds. Mammals of various sizes, including rats and mice, form the chief portion, but birds of various sorts are also eaten, including ducks and grouse. Insects are also consumed, and, in one case, fish.

LOPHOSTRIX.

Lophostrix, Lesson, Compl. Buffon, vii. p. 261 (1836).
Scops, Sharpe, Cat. Birds Brit. Mus. ii. p. 43 (partim).

Though united to *Scops* by Dr. Sharpe, we think that *Lophostrix* may well be kept separate on account of the larger size of its two species, their totally different style of coloration, and the very long ear-tufts, which are rendered very conspicuous by being, to a great extent, pure white.

Only two species are known, viz. *L. cristata*, which ranges over the northern part of South America, from Colombia to Guiana, and throughout the Amazons valley to Ecuador and Peru, and *L. stricklandi*, which is strictly Central American, as shown below.

1. Lophostrix stricklandi.

Scops cristata, var., Strickl. Contr. Orn. 1848, p. 60, t. 10[1].
Lophostrix stricklandi, Scl. & Salv. Ibis, 1859, p. 221[2]; Salv. P. Z. S. 1867, p. 158[3]; 1870, p. 216[4]; Cat. Strickl. Coll. p. 474[5]; Lawr. Ann. Lyc. N. Y. ix. p. 132[6]; v. Frantz. J. f. Orn. 1869, p. 367[7]; Boucard, P. Z. S. 1878, p. 45[8]; Sumichrast, La Nat. v. p. 237[9]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125[10]; Cherrie, Auk, 1892, p. 327[11].
Scops stricklandi, Sharpe, Cat. Birds Brit. Mus. ii. p. 124[12].

Supra chocolatino-brunnea, fusco minutissime irrorata; capite toto summo nigricanti-brunneo, fronte stricte alba, superciliis et plumis auricularibus in pogonio interno albis, genis nigris, plaga magna infra oculos rufa: corpore subtus cervino-brunneo, fusco irrorato; primariis in pogonio externo albido fasciatis, scapularibus et tectricibus externis albo maculatis, subalaribus pallide fulvis fusco maculatis; cauda saturate cinnamomea, subtus ad basin cervino fasciata. Long. tota circa 15·0, alæ 12·0, caudæ 7·5, tarsi 1·6. (Descr. exempl. ex Guatemala. Mus. nostr.)

Hab. Mexico, Villa Alta (*M. Trujillo*), Cacoprieto (*Sumichrast*[9]); Guatemala, Coban (*Dillwyn*[1 5]), Vera Paz (*Skinner*[2]), San Pedro Martyr (*O. S. & F. D. G.*); Costa Rica (*Hoffmann*[7]), San José (*v. Frantzius*[6], *Zeledon*[10], *Cherrie*[11]), San Carlos (*Boucard*[8]), Santa Ana (*Zeledon*[10]); Panama (*mus. Rothschild*), Bugaba[4], Santa Fé[3], Vivala (*Arcé*).

This Owl is the Central-American form of a bird long ago described by Daudin as *Strix cristata*, which subsequently was made the type of the genus *Lophostrix* by Lesson. The differences whereby they may be distinguished were pointed out by Strickland[1], who figured a Guatemala bird sent him by Mr. L. L. Dillwyn from Coban in 1848[5]. The two birds are much alike, but the Central-American form has less white on the forehead, a darker head, and the ear-coverts broadly edged with black.

Lophostrix stricklandi occurs sparingly wherever it is found. It reaches Southern Mexico in its northern range, having been met with by Trujillo at Villa Alta in Oaxaca, and by Sumichrast on the Isthmus of Tehuantepec. Besides the specimen from Coban already mentioned, which is now in the Cambridge Museum, we have seen others from Vera Paz sent by Skinner; it also occurs in the forests of the mountains trending to the Pacific, whence two birds were brought us on October 11,

1873, from the slopes of the Volcan de Agua, above the village of San Diego. The iris of these fresh specimens was bright yellow and the toes lead-colour.

Southward of Guatemala it has been traced to Costa Rica and the State of Panama. Near San José, in the former country, Mr. Cherrie says it is resident but rather rare.

SCOPS.

Scops, Savigny, Syst. Ois. Egypte, p. 9 (1810); Sharpe, Cat. Birds Brit. Mus. ii. p. 43.
Megascops (subgenus), Kaup, Isis, 1848, p. 769.

Excluding the two species of *Lophostrix* which Dr. Sharpe places in *Scops*, twenty-three species and twenty-seven subspecies are included in that author's catalogue of Striges published in 1875. This statement alone shows how variable the members of *Scops* are and how much room there is for difference of opinion as to the specific limits of the geographical and other forms. Many of the species are dichromatic and, moreover, it appears from recent observations that one form may change in the same individual into another. Besides these recognized states of plumage there is apparently endless individual diversity of colour, so that only from a general impression derived from a number of specimens seen together, which must, from their being found in the same district, belong to one species, can some slight clue to the existence of different races be obtained.

We have arrived at the conclusions which follow as to the number of species in our region after a prolonged study, in which we have had Dr. Sharpe's aid. We have also had the great benefit of a correspondence with Mr. Ridgway, and the loan of some of his types, and we have accepted his views so far as our series of specimens, now a very extensive one, has permitted us. The result, we still fear, must be modified hereafter to some extent; but the majority of the eleven species we recognize will, we have little doubt, be left to stand as such.

The species of *Scops* of North America are sharply divided from those of the southern continent by the feathering of the toes. Many of those of Central America are intermediate in this respect, the feathers of the digits being replaced by bristle-like feathers. With these occur birds of purely southern type, though the latter probably affect the hotter low-lying districts.

Scops may be distinguished from *Bubo*, which it resembles in having prominent ear-tufts, by the much smaller size of all the species, some of which are amongst the smallest of the Owls, and by the distinct style of coloration. The wings, too, are comparatively longer and reach to the extremity of the tail.

The range of *Scops* embraces the whole of the Old World except the extreme north. It is absent from Australia and from Oceania. In North America forms of *Scops* are found from Canada and Sitka southwards, and in South America only Argentina, Patagonia, and Chili are outside its range.

A. *Digitis supra plumosis aut setosis.*

1. **Scops trichopsis.** (Tab. LXII.)

Scops trichopsis, Wagl. Isis, 1832, p. 276[1]; Scl. P. Z. S. 1858, p. 357 (?)[2]; Salv. Ibis, 1874, p. 314[3].

Scops (*Megascops*) *trichopsis*, Kaup, Trans. Z. S. iv. p. 227[4].

Scops maccalli, Scl. P. Z. S. 1858, p. 296[5]; Scl. & Salv. Ibis, 1859, p. 220[6]; Dugès, La Nat. i. p. 138[7].

Scops asio, var. *enano*, Lawr. MS., Ridgw. Bull. Essex Inst. v. p. 200[8]; Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 48[9].

Scops enano, Sharpe, Cat. Birds Brit. Mus. ii. p. 118[10].

Megascops adspersus, Brewster, Auk, 1888, p. 87[11]; 1891, p. 400, t. 3[12]; Hasbrouck, Auk, 1893, p. 264[13].

Megascops ridgwayi, Nelson & Palmer, Auk, 1894, p. 39[14].

Supra saturate cinereus, fusco vermiculatus et cervino guttatus, plumis omnibus rhachidibus late nigris nigroque transfasciatis: subtus albidus, plumis medialiter nigris et nigro distincte transfasciatis; scapularibus extrorsum maculis magnis albis notatis, tectricibus mediis et majoribus eodem modo picturatis, remigibus fuscis in pogonio externo albido regulariter notatis. Long. tota circa 8·0, alæ 6·1, caudæ 3·0, tarsi 1·1. (Descr. feminæ ex Ajusco, Mexico. Mus. nostr.)

Forma altera rufescens, nigro undique distincte guttata.

Hab. Mexico (*Dr. Petz*[1]), El Carmen in Chihuahua (*R. R. McLeod*[11]), Guanajuato (*Dugès*[7]), Sierra Madre de Tepic (*W. B. Richardson*), Patzcuaro (*Nelson*[14]), Zentla (*Ferrari-Perez*), Ajusco (*W. B. Richardson*), Chimalpa in the Valley of Mexico (*Ferrari-Perez*), Omilteme in Guerrero (*Mrs. H. H. Smith*), La Parada, Oaxaca (*Boucard*[5 6]); Guatemala (*Skinner*[6]), Villa Maria, Joyabaj (*Heyde, in U.S. Nat. Mus.*), Uspantlan, Quiché (*U.S. Nat. Mus.*), Dueñas, Volcan de Fuego above Calderas, San Bernardo in the Motagua Valley, Coban (*O. S. & F. D. G.*[3]); Honduras? (*G. C. Taylor*[2]).

The original specimen of this species, described by Wagler[1], formed part of the collection sent by Dr. Petz to the Würzburg Museum from Mexico, *Glaucidium gnoma* and *Conurus petzi*, also described by Wagler, being included in the same collection, which was most probably formed on the western slope of the Mexican Cordillera, where *C. petzi* abounds and both the Owls are found. For a good many years we have used Wagler's name as we do now, though we associated with it Cassin's *S. maccalli*, which we now consider to belong to a distinct bird. Until quite recently American naturalists have applied Wagler's title to the Arizona bird now called *S. cineraceus*, and distinguished the present species as *S. enano*.

We are now in accord with Mr. Ridgway in the application of Wagler's name; and on examining specimens we sent to him for that purpose, he tells us that our *S. trichopsis* is the same as *S. enano*, and, moreover, that *Megascops adspersus*, Brewster, and *M. ridgwayi*, Nelson and Palmer, also belong to the same species. We were disposed

to consider *M. pinosus*, Nelson and Palmer, to be another synonym; but Mr. Ridgway assures us this is not so, and we defer to his opinion with the remark that, in view of the great variation prevalent in this species, the probability of a distinct bird existing in the middle of the range of *S. trichopsis* is not probable, and until more specimens are obtained its status must be at least doubtful. *M. pinosus* was founded on a single young bird shot in the upland pine-forest near Las Vigas. Messrs. Nelson and Palmer's description we give below*.

The range of *S. trichopsis* extends as far north as the Mexican State of Chihuahua, where McLeod obtained the bird described by Mr. Brewster as *M. adspersus*[11]. Our specimens came from various parts of the tablelands of Mexico. Sumichrast

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* **Megascops pinosus,** sp. nov., Nelson & Palmer, Auk, 1894, p. 39.

" *Type* No. 131517, ♂ juv., U.S. Nat. Mus. Dept. of Agriculture, Collection from Las Vigas, Vera Cruz, Mexico, June 9, 1893. Collected by E. W. Nelson. (Original No. 1235.)

" *Measurements*: wing 132 mm. (5·20 in.); tail 61·5 mm. (2·38 in.); tarsus 28 mm. (1·18 in.).

" *Colour.*—Crown including ear-tufts, neck and back, with upper tail-coverts, dark clove-brown obscurely mottled and faintly barred with dull cinnamon with faint traces of dull greyish. About the neck behind is a narrow collar in which the feathers are distinctly barred with greyish and dull cinnamon. Feathers of chin, cheeks, ear-coverts, lores and sides of forehead greyish white irregularly and finely barred and mottled with blackish-brown. Entire lower surface except chin barred with greyish-white and clove-brown, the white bars being shaded or washed in part, particularly along the flanks, with pale cinnamon. In many instances the brown bars are connected by fine shaft-lines of brown which do not affect the general pattern. The barring on the throat and upper breast is finer or narrower than elsewhere. The rest of under surface has the alternate light and dark bars, three of each on each feather, of equal width and strongly contrasted. This produces a strong pattern of coarse light and dark barring which is quite unlike that of any other member of this group known to us. The feathering of the feet and tarsus is dull greyish mottled with dark brown. Toes scantily feathered. Quills clove-brown, with a series of light semicicular and subquadrate spots along the margin of outer feather. Near the base of outer quills these spots are nearly pure white on some feathers becoming cinnamon towards the tips. On inner quills they are all dull cinnamon. Secondaries and tertials clove-brown with dull cinnamon bars on outer webs, most of these bars being mottled with the ground-colour of the feathers. On inner vanes of quills and secondaries the pale spots on outer vanes are matched by indistinct light bars. This mottling mixed with grey extends over most of the surface of innermost tertials. Large quill of alula bordered with fine white edging connecting three pure white spots on outer web. Both webs of second quill of alula and inner web of larger quill with three spots of dull cinnamon. Lesser and middle coverts smoke-brown with faint mottling of cinnamon. Greater coverts clove-brown, bordered along outer vane by mottling and spots of greyish and dull cinnamon. Tail, colour of quills, narrowly barred with broken lines and mottling of pale cinnamon.

" Unfortunately the only specimen of this bird in the collection is immature. It is very different in the character of its markings from the young of any other known *Megascops*. The specimen was killed in the pines at the north-east base of the Cofre de Perote, near Las Vigas, in Vera Cruz, at an altitude of over 8000 feet." (*Nelson & Palmer, l. s. c.*)

Concerning this bird, Mr. Ridgway informs us by letter that, " Although a young bird, it certainly belongs to a very distinct species. It cannot possibly belong to any of the known forms. It is extremely dark (darker than *S. kennicotti*), and is very remarkable for the great breadth of the dark blackish-brown bands across the lower parts, which average quite ·15 in. in width, making them appear disproportionately wide, the bird being no larger than *S. trichopsis*. It may possibly prove to be a very dark local race of *S. trichopsis*."

includes it in his list as found at Cacoprieto on the Isthmus of Tehuantepec; but as the only specimen we have of Sumichrast's, labelled in his handwriting "*Scops maccalli*," from this lowland locality is certainly one of *S. cooperi*, we conclude that his bird was wrongly named.

In Guatemala *S. trichopsis* has been found in several highland localities; but one was shot in October 1862 at San Bernardo, in the valley of the Motagua river, on the road from the city of Guatemala to Vera Paz, at an elevation of about 2000 feet above the sea.

The front figure of the Plate represents a male from the Volcan de Fuego, Guatemala, and the back figure a young bird of the rufous phase from Coban in Vera Paz.

2. Scops maccalli.

Scops maccalli, Cassin, Ill. Birds Cal. & Tex. p. 180[1]; Cass. in Birds N. A. p. 52, t. 39[2]; Baird, Mex. Bound. Surv. Birds, p. 4, t. i.[3]

Scops asio, β. *maccalli*, Ridgw. Pr. U. S. Nat. Mus. i. p. 109[4].

Megascops asio maccalli, Hasbrouck, Auk, 1893, p. 254[5].

Scops trichopsis, Sharpe, Cat. Birds Brit. Mus. ii. p. 119 (partim descr. ad.)[6].

Supra fusco-cinereus, undique nigricante vermiculatus, plumis omnibus stria rhachidali nigra, scapularibus extrorsum macula magna alba terminatis, tectricibus majoribus et mediis eodem modo maculatis; remigibus fuscis, in pogonio externo regulariter cervino-albido maculatis; cauda fusca, cervino indistincte sex-fasciata: subtus griseus, plumis omnibus medialiter nigro striatis, striis pectoralibus latioribus omnibus quoque transversim stricte fasciatis; facie grisea, indistincte fusco fasciata, nigro postice marginata; tibiis (parte distali) cervino-albidis fusco maculatis, tarsis quoque maculatis. Long. tota circa 8·0, alæ 5·9, caudæ 2·8, tarsi 2·2. (Descr. maris ex Brownsville, Texas. Mus. nostr.)

Hab. North America, Texas[1].—Mexico, Rio Salado, Topo Chico and Monte Morelos in Nuevo Leon (*F. B. Armstrong*).

We have a good series of specimens of this Owl from the lower portion of the Rio Grande Valley, both from the Texan side of the river and from the Mexican State of Nuevo Leon. They must, no doubt, be referred to Cassin's *Scops maccalli*, the types of which came from the same district[1]. How far to the westward of this region the bird occurs we are not in a position to say, the Owls from Colorado Springs and from Arizona being slightly different, and have been described as *S. aikeni* and *S. cinereus* respectively. The difference, however, between *S. maccalli* and *S. aikeni*, or what we take to be that bird, is exceedingly small, and consists chiefly in the central shaft-stripes of the feathers of the latter being wider and more conspicuous; and the absence of any rufous phase in *S. aikeni*, which, however, is rare in the former, may also be a distinction. The supposed identity of *S. maccalli* with *S. trichopsis* has caused great confusion in the synonymy of both birds, but we hope that in future this may be avoided. We have, by correspondence with Mr. Ridgway, and by lending him several of our specimens, come to full accord as to the status of *S. trichopsis*, as will be seen under our account of that bird.

Of the habits of *S. maccalli* hardly anything is recorded.

3. Scops cineraceus.

Scops trichopsis, Ridgw. Pr. U. S. Nat. Mus. i. p. 114 (nec Wagler) [1].

Megascops asio cineraceus, Ridgw. Auk, 1895, p. 389 [2]; Man. N. Am. Birds, ed. 2. p. 592 [3].

Cinereus, fusco vermiculatus, supra plumis omnibus stria rhachidali angusta nigra, striis pilei paulo latioribus: subtus fere ut supra, sed albicantior, plumis omnibus tenuiter transfasciatis; area circum oculos leviter fusco fasciata, margine faciei albo, extrorsum distincte nigro limbato; plumis pectoris in medio distincte nigris; tarsis albis, fusco variegatis; digitis ad basin plumosis ad apicem setosis. Long. tota circa 7·0, alæ 6·1, caudæ 2·9, tarsi 1·3. (Descr. maris ex Tucson, Arizona. Mus. nostr.)

Juv. griseo-albidus, undique fusco frequenter transfasciatus.

Hab. North America, Arizona [1 2 3].—N. Mexico?

This bird for a long time passed as the true *S. trichopsis* until Mr. Ridgway separated it in 1895 [2]. Its nearest allies are in fact *S. maccalli* and *S. aikeni*, from which it differs, as Mr. Ridgway says, in having the dark markings fine and numerous, giving the plumage a delicately pencilled aspect.

S. cineraceus occurs in Arizona, near Tucson and elsewhere, close to our northern frontier; but as yet we have never seen a specimen from within our limits, though it doubtless occurs in North-western Mexico.

Mr. Ridgway informs us that this Owl extends through New Mexico to the extreme western part of Texas.

4. Scops vinaceus.

Megascops vinaceus, Brewster, Auk, 1888, p. 88 [1]; 1891, p. 400, t. 3 [2].

"*Sp. char.*—Most nearly allied to *M. cooperi*, but much smaller and lighter coloured.

"♀ *ad.* (No. 14124. Collection of W. Brewster, Durasno, Chihuahua, Mexico, Dec. 2, 1884; R. R. M'Leod).

"Above pinkish, in places rusty drab, all the feathers except the outer primaries vermiculated with dark brown, those of the forehead, crown, 'ear-tufts,' back, scapulars, and wing-coverts with rather narrow shaft-streaks of blackish or clove-brown. Primaries, secondaries and tail-feathers barred with light wood-brown, the bars on the tail narrow and distinct excepting on a short space near the tips of the feathers where they are broken and confused, those of the wings broad, distinct on the outer webs of the primaries where they form a distinct conspicuous light notching, but on the inner webs of these feathers, as well as on both webs of the secondaries, only dimly outlined; cheeks, throat and entire underparts ashy white tinged with pinkish-buff, most of the feathers with fine, wavy transverse bars of dull brown, those of the breast, abdomen, and under tail-coverts with narrow, sharply outlined mesial streaks of dark clove-brown; sides of neck and middle of breast with coarser, broader spots of the same colour; tibiæ and tarsi tinged with rusty chestnut, and flecked with burnt umber. Under wing-coverts creamy buff with sparse flecks of brown. Wing, 5·85; tarsus, 1·25; tail, 3·04; middle toe, ·70; bill, length from nostril, ·47; depth at nostril, ·43; longest feather of ear-tufts, ·96." (*Brewster, l. s. c.*)

Hab. Mexico, Durasno in Chihuahua (*R. R. M'Leod* [1]).

We know nothing of this bird, which, from the figure, appears to be a pale form of *S. maccalli.* Mr. Ridgway tells us it is very distinct from anything else he has seen.

5. Scops cooperi.

Scops cooperi, Ridgw. Pr. U. S. Nat. Mus. i. p. 116 [1].

Megascops cooperi, Hasbrouck, Auk, 1893, p. 263 [2].

Scops trichopsis, Sumichrast, La Nat. v. p. 237 (nec Wagler) [3].

Supra griseo-cervinus, minutissime fusco vermiculatus; rhachidibus plumarum anguste nigris; scapularibus extrorsum et tectricibus mediis et majoribus albo maculatis, remigibus extus maculis subquadratis cervinis nigro limbatis notatis; cauda similiter frequenter transfasciata: subtus ut supra, sed albicantior, plumis singulis indistincte nigro transfasciatis; facie pallide cervina, fusco fasciata, margine nigro nullo; tarsis albidis fulvo fasciatis, digitis setosis. Long. tota circa 9·0, alæ 6·8, caudæ 3·3, tarsi 1·4. (Descr. feminæ ex Momotombo, Nicaragua. Mus. nostr.)

Hab. MEXICO, Cacoprieto on the Isthmus of Tehuantepec (*Sumichrast* [3]); SALVADOR, V. de San Miguel (*W. B. Richardson*); NICARAGUA, Acoyapa (*Marche, in Mus. Brit.*), Momotombo (*W. B. Richardson*); COSTA RICA, Santa Ana, San José (*Zeledon* [1]).

This Owl has much the appearance of *S. guatemalæ*, with which Dr. Sharpe, in his Catalogue, placed a specimen from Nicaragua which undoubtedly belongs here. It may at once be distinguished from that species, and all the members of the *S. brasilianus* section of the genus, by its toes having scattered bristly feathers over their upper surface.

We have now seen six specimens of *S. cooperi*, including one lent us by Mr. Ridgway and named by him. They are almost exactly alike in their general tint and in the size and character of the dark markings.

The most northern locality we have for this species is the Isthmus of Tehuantepec, whence Sumichrast sent us a specimen shot on January 7, 1880. It is named "*Scops maccalli*," which name was doubtless changed to *S. trichopsis* in the list of Mexican birds published in 'La Naturaleza.' A note on the label of this bird states that the iris is yellow, and the digits dull yellow.

B. *Digitis nudis.*

a. *Tarsis plerumque plumosis.*

6. Scops guatemalæ.

Scops, sp.?, Scl. & Salv. Ibis, 1859, p. 221 [1].

Scops brasilianus, Salv. Ibis, 1866, p. 204 [2]; P. Z. S. 1870, p. 216 [3]; Lawr. Ann. Lyc. N. Y. ix. p. 132 [4]; v. Frantz. J. f. Orn. 1869, p. 366 [5]; Boucard, P. Z. S. 1878, p. 45 [6].

Megascops brasilianus, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [7]; Cherrie, Auk, 1892, p. 327 [8].

Scops choliba, Lawr. Ann. Lyc. N. Y. vii. p. 462 [9].

Scops guatemalæ, Sharpe, Cat. Birds Brit. Mus. ii. p. 112, t. 12 [10].

Scops brasilianus, γ. *guatemalæ*, Ridgw. Pr. U. S. Nat. Mus. i. p. 99 [11].

Megascops brasilianus guatemalæ, Hasbrouck, Auk, 1893, p. 263 [12].

Megascops vermiculatus, Ridgw. Pr. U. S. Nat. Mus. x. p. 267 [13]; Hasbrouck, Auk, 1893, p. 264 [14].

Megascops marmoratus, Nelson, Auk, 1897, p. 49 [15].

Supra brunneus, pallide cervino et griseo-albido variegatus et nigricante irregulariter maculatus; superciliis et corpore toto subtus sordide albis, hoc rhachidibus plumarum anguste nigris et lineis transversis angustis irregulariter fasciatis, iis pectoris magis numerosis, margine faciei indistincto vix nigro indicato. Long.

tota circa 9·0, alæ 6·5, caudæ 3·4, tarsi 1·3. (Descr. exempl. ex Coban, Guatemala. O. S. 2352. Mus. nostr.)

Forma hepatica. Supra rufa, plumis omnibus medialiter nigris, maculis scapularum et tectricum alarum albis distinctis ; subtus usque ad pectus imum rufescens, abdomine albo, plumis omnibus medialiter nigris et lineis nigris frequenter transfasciatis. (Descr. exempl ex Las Salinas, Guatemala. Mus. nostr.)

Hab. Mexico, Vera Cruz (*U.S. Nat. Mus.*), Catemaco (*Nelson & Goldman* [15]), Jalapa (*de Oca*), Zentla (*Ferrari-Perez*), Chimalapa, Isthmus of Tehuantepec (*W. B. Richardson*), Tizimin in Yucatan (*G. F. Gaumer*) ; Guatemala, Coban, Choctum, Las Salinas (*O. S. & F. D. G.*), Cahabon (*Skinner* [1 2]) ; Costa Rica (*v. Frantzius* [5], *Carmiol*, *Gen. Lawrence* [13]), San José (*v. Frantzius* [4], *Boucard* [6], *Cherrie* [8]), La Palma de San José (*Zeledon* [7]) ; Panama, Calobre, Chitra, Calovevora (*Arcé* [3]), Lion Hill (*M'Leannan* [9]).—W. Ecuador.

The common bare-toed Scops Owl of Central America was long considered by us to be undistinguishable from the South-American *S. brasilianus*, but Dr. Sharpe, when writing his 'Catalogue of Owls in the British Museum,' separated it under the name of *S. guatemalæ*, and in so doing he was followed by Mr. Ridgway. The chief differences defining *S. guatemalæ* from *S. brasilianus* are the more confused mottling of the under surface and the denser marking of the chest as compared with the abdomen of the former, the middle of the feathers of the under surface being white, without any of the buff colour characterizing those of *S. brasilianus*.

Mr. Ridgway in his first paper [11], when he had all the Central-American specimens we then possessed before him, made no distinction between the birds of Guatemala and those of Costa Rica and Panama; but he subsequently separated the latter under the name of *Megascops vermiculatus* [13], comparing the types from Costa Rica with *S. nudipes*, the tarsus being bare at the extreme end, and the sides of the face without any black border. The plumage he describes as much more uniform both above and below, and the feathering of the legs light brownish or brownish-white, distinctly barred with brown instead of plain bright ochraceous. It is, however, with *S. guatemalæ* that the Costa Rica and Panama birds must be compared; and so far as the coloration is concerned they show practically no difference, every variety of colour being present in a series of the two birds, and the dark mark at the sides of the face is to be seen in some southern birds though no doubt generally absent. Then as regards the extent of the feathering of the extremity of the tarsus no doubt great variation exists, even in Mr. Ridgway's types one has the bare part more than twice as wide as the other, and amongst our series we notice even greater discrepancy. Failing, then, to discover any distinctive characters we unite *S. vermiculatus* with *S. guatemalæ*. We may add that Mr. Ridgway has most kindly sent us one of his types (no. 90398) for examination, and we find almost its exact counterpart in a specimen from Calovevora.

Turning now to the Mexican State of Vera Cruz, whence two species or subspecies have been described, viz. *S. cassini* and *S. marmoratus* [15], we have Mr. Ridgway's

authority for saying that the type of the latter is not separable from the Guatemala bird *S. guatemalæ*. There remains *S. cassini*, which Mr. Ridgway considers a very distinct species, the only specimens of which he has seen came from the State of Vera Cruz. One of the types (no. 33556) he has kindly sent us for examination, and in our opinion it does not differ more widely from some specimens of *S. guatemalæ* than they do from one another. But as our series of skins from Vera Cruz is limited to a specimen from Huatusco, and one in hepatic plumage from Jalapa, we do not feel in a position to form a decision on the subject. Whether the acquisition of a good series of specimens will show that two species of this form of *Scops* are found in Vera Cruz, we venture to think very doubtful. In the meantime we append Mr. Ridgway's original description of his *Scops brasilianus*, ϵ. *cassini* *.

The range of *S. guatemalæ* extends over the hotter parts of Southern Mexico, being found, as already stated, in Vera Cruz; it also occurs on the eastern side of the Isthmus of Tehuantepec, in Yucatan, all over Eastern Guatemala, and thence southwards, probably uninterruptedly, through the forest-region to Costa Rica, Panama, and Eastern Ecuador. In Guiana an allied form occurs which we described recently as *Scops roraimæ*, and this is found in company with the true *S. brasilianus*, the two keeping quite distinct.

7. Scops brasilianus.

Strix brasiliana, Gm. Syst. Nat. i. p. 289 [1].

Scops brasilianus, Scl. & Salv. P. Z. S. 1868, p. 57 [2]; Sharpe, Cat. Birds Brit. Mus. ii. p. 108 [3]; Ridgw. Pr. U. S. Nat. Mus. i. p. 90 [4].

Supra brunneus, fusco vermiculatus et cervino maculatis, plumis omnibus medialiter nigris: subtus albus, plumis omnibus medialiter cervinis, rhachidibus distincte nigris et fasciis angustis nigris irregularibus distincte notatis; faciei lateribus distincte nigro marginatis. Long tota circa 10·0, alæ 6·7, caudæ 3·5, tarsi 1·25. (Descr. maris ex Roraima, Brit. Guiana. Mus. nostr.)

Hab. Costa Rica, San José (*Zeledon*).—South America generally, from Colombia to South Brazil and Paraguay [2].

Our authority for the occurrence of this South-American Scops Owl in our fauna is Mr. Ridgway, who states that he has in the United States National Museum a good series of specimens both from Costa Rica and South America, and that he is unable

* "*Habitat.*—Eastern Mexico (Mirador; Jalapa).

"*Diagnosis.*—Wing, 5·80–6·10; tail, 3·20–3·50; culmen, ·45–·50; tarsus, 1·20; middle toe, ·80.

"*Grey phase*: *adult.*—Above greyish-brown, finely mottled with lighter and darker shades, the general dusky brownish line interrupted by two conspicuous lighter bands, one across the nape, and another across the occiput, where the pale brownish-buff spots are very large and the darker markings correspondingly reduced in size. Beneath whitish, the feathers with ragged mesial streaks of blackish and transverse vermiculations of the same.

"*Rufous phase*: *adult.*—Above cinnamon-rufous, with blackish shaft-streaks. Beneath white, with blackish mesial streaks and irregular transverse base of rufous and blackish." (Pr. U. S. Nat. Mus. i. p. 102.)

Mr. Ridgway goes on to compare his specimens with *S. brasilianus* and *S. atricapillus*.

to discover any difference between them. *S. brasilianus* therefore occurs with *S. guatemalæ*, or, as Mr. Ridgway would call it, *S. vermiculatus*, in Costa Rica, just as it also occurs with *S. roraimæ* in British Guiana, the two birds being apparently quite distinct.

S. brasilianus differs from all other species of *Scops* in our country, except *S. hastatus*, in having a distinct shade of buff over the middle of the feathers of the under surface. The pattern, too, of this portion of the plumage is continuous over the breast downwards, the breast not being darker and more closely marked than the abdomen as in *S. guatemalæ*.

The references recording a *Scops* from the Line of the Panama Railway we have placed under *S. guatemalæ*, but they may belong to this species. The true *S. brasilianus* occurs in the Cauca Valley, and thence southwards over the greater part of Tropical South America.

8. Scops hastatus.

Megascops hastatus, Ridgw. Pr. U. S. Nat. Mus. x. p. 268 [1]; Man. N. Am. Birds, ed. 2, p. 593 [2].

S. brasiliano similis, sed supra omnino pallidior et grisescentior, maculis nigris præcipue in pileo magis obviis: subtus fasciis transversis magis numerosis et indistinctioribus.

Hab. Mexico, Mazatlan (*Xantus* [1]), Mineral de San Sebastian in Jalisco (*A. C. Buller*), Tepic (*W. B. Richardson*).

Mr. Ridgway separated *Scops hastatus* from *S. brasilianus* in 1887 [1], his types having previously been considered to belong to *S. guatemalæ*. One of these specimens, that from Mazatlan (no. 23793), has been kindly forwarded to us, and we find its counterpart in a specimen from Mineral de San Sebastian in Jalisco. Another specimen from Tepic we think must also be referred to the same form, but it is decidedly darker and the black spots, especially on the under surface, wider and more distinct.

All these specimens have a wash of buff tint on the under surface (slighter in the Tepic example) similar to, but not so strong as in, *S. brasilianus*; the general markings, too, of the under surface are nearly uniform and not denser on the breast. Both these characters seem to separate *S. hastatus* from *S. guatemalæ*, and we are disposed to keep this form from Western Mexico distinct from the more eastern and southern bird. At the same time we must admit that the difference is not very pronounced, and consists of a modification of colour only, a very variable character in these Owls.

9. Scops barbarus.

Scops flammeola, Salv. Ibis, 1861, p. 355 (nec Kaup) [1].

Scops barbarus, Scl. & Salv. P. Z. S. 1868, p. 56 [2]; Ex. Orn. p. 101, t. 51 [3]; Sharpe, Cat. Birds Brit. Mus. ii. p. 107 [4]; Ridgw. Pr. U. S. Nat. Mus. i. p. 103 [5].

Megascops barbarus, Hasbrouck, Auk, 1893, p. 262 [6].

Niger, pallide rufo punctatus et variegatus, superciliis in torquem nuchalem transeuntibus albo guttatis; scapularium pogoniis externis distincte albo ocellatis, primariis fusco-nigris in pogonio externo rufescenti-

albo septies transfasciatis ; cauda nigricante, rufescente quinquies transfasciata : subtus nigricans, præcipue in ventre ocellis albidis frequenter aspersus ; subcaudalibus albidis, fusco punctatis ; tarsis vestitis, parte distali et digitis omnibus omnino nudis. Long. tota circa 7·0, alæ 5·4, caudæ 2·5, tarsi 1·0. (Descr. exempl. typ. ex Vera Paz, Guatemala. Mus. nostr.)

Forma hepatica. Rufescens, supra nigro striata, subtus albido ocellata, plumis stria rhachidali nigra. (Descr. exempl. typ. ex Santa Barbara, Guatemala. Mus. nostr.)

Hab. GUATEMALA, Santa Barbara in Vera Paz (*R. Owen* [1 2]), Vera Paz (*O. S. & F. D. G.*; *H. Hague, in U.S. Nat. Mus.* [5]).

Of this *Scops* but little is known. The original specimen was obtained near Santa Barbara, a hamlet in the hills above San Gerónimo in Guatemala. Subsequently another was secured somewhere in Vera Paz, and yet a third in the same country by Mr. Hague, who sent it to the Smithsonian Institution.

Scops barbarus belongs to the naked-toed section of the genus. In size it is comparable with *S. flammeola*, but may readily be distinguished by the white marks on the scapulars and by the distal portion of the tarsi being naked like the toes. The two species are really very distinct, and in fact *S. barbarus* is one of the most isolated forms of the genus.

10. Scops flammeola.

Strix flammeola, Licht. in Mus. Berol.[1].

Scops (Megascops) flammeola, Kaup, Trans. Z. S. iv. p. 226 [2].

Megascops flammeola, Bendire, Life Hist. N. Am. Birds, i. p. 374, t. 12. f. 15 [3]; Hasbrouck, Auk, 1893, p. 260 [4]; Fisher, Bull. U. S. Dep. Agr. no. 9, p. 173 [5].

Scops flammeola, Scl. P. Z. S. 1858, p. 96 [6]; 1864, p. 178 [7]; Schl. Mus. P.-B., Oti, p. 27 [8]; Scl. & Salv. P. Z. S. 1868, p. 57 [9]; Ex. Orn. p. 99, t. 50 [10]; Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 58 [11]; Pr. U. S. Nat. Mus. i. p. 104 [12]; Henshaw, Orn. Wheeler's Exp. 1874, p. 406 [13]; Sharpe, Cat. Birds Brit. Mus. ii. p. 105 [14]; Sumichrast, La Nat. v. p. 237 [15].

Supra grisescenti-fuscus, nigro striatus et vermiculatus, scapularium marginibus et capitis plumis partim rufo variegatis ; remigum primariorum pogoniis externis maculis quadratis albis ornatis : subtus grisescenti-albus, plumis omnibus striga rhachidali et fasciis numerosis transversis nigris instructis ; gula et pectore rufescente partim tinctis ; tarsis omnino plumosis albis, nigro variegatis : rostro pallide corneo, apice albicante ; pedibus flavidis. Long. tota circa 7·0, alæ 5·5, caudæ 2·6, tarsi 0·9. (Descr. exempl. ex Dueñas, Guatemala. Mus. nostr.)

Hab. NORTH AMERICA, N. California [11], Nevada [11], Colorado [11], Arizona [13].—MEXICO [1], Valley of Mexico (*White* [7]), Chimalpa, San Antonio Coapa (*Ferrari-Perez*), Alpine region of Vera Cruz (*Sumichrast* [15]), Jalapa (*Sallé* [6]); GUATEMALA, Dueñas, Cerro de Paramos (*O. S. & F. D. G.* [10]).

This little Owl, nearly the smallest of the American species of *Scops*, was described by Kaup [2] from a specimen in the Berlin Museum, probably sent there by Deppe from Mexico about the year 1829, and where it received the name of *Strix flammeola* from Lichtenstein [1].

According to Sumichrast it is found in the Alpine region of the State of Vera Cruz [15], and we also know of its occurrence in the Valley of Mexico, where White obtained a specimen [7], and where Don Fernando Ferrari-Perez also met with it, both at Chimalpa and San Antonio Coapa, villages in the Valley of Mexico, and in the pine-region of the Mexican plateau. *S. flammeola* also occurs in Guatemala, though very sparingly, as we obtained only two specimens during our stay in that country—one near Dueñas, and one from near the village of Paramos on the hills above Dueñas, at an altitude of over 6000 feet above sea-level. Both these specimens were brought us by Indian hunters.

Beyond the northern limits of Mexico this Owl ranges through Arizona and Colorado to Northern California, and Bendire gives an account of its range and habits so far as known [3]. Mr. W. G. Smith, of Loveland, Colorado, found three nests in 1890 in Colorado, all of them in old Woodpeckers' holes in aspen or pine trees, at elevations ranging from 10,000 to 8000 feet. The usual number of eggs is four, their colour white with a faint creamy tint, oval in shape, and slightly glossy.

The food of *S. flammeola* consists of small mammals, coleoptera, and other insects, and sometimes a scorpion.

The iris of this species, according to Sumichrast, is golden-yellow and the cere olive-yellow.

b. *Tarsis fere omnino nudis.*

11. Scops nudipes.

Bubo nudipes, Vieill. Ois. Am. Sept. i. p. 53, t. 22 [1].

Scops nudipes, Scl. & Salv. P. Z. S. 1868, p. 57 [2]; Ex. Orn. p. 102 [3]; Salv. P. Z. S. 1870, p. 216 [4]; Sharpe, Cat. Birds Brit. Mus. ii. p. 121 [5]; Ridgw. Pr. U. S. Nat. Mus. i. p. 89 [6].

Megascops nudipes, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [7]; Cherrie, Auk, 1892, p. 327 [8]; Hasbrouck, Auk, 1893, p. 262 [9].

Ephialtes nudipes, Cassin, List Owls [10]. (Catalogue of the Strigidae in the Collection of the Academy of Natural Sciences, of Philadelphia.) in Suppl. Proc. Acad. Nat. Sci. Philadelphia, 1849, (p. 20).

Strix psilopoda, Vieill. N. Dict. d'Hist. N. vii. p. 46 [11].

Supra rufescens, nigro vermiculatus et variegatus; dorsi et pilei plumis rufescente guttatis, scapularium pogoniis externis albo notatis, primariis fusco-nigricantibus pallide rufo guttatis; cauda nigricante, rufo variegata vix transfasciata: subtus rufus, plumis omnibus stria rhachidali nigra et nigro transversim variegatis, hypochondriis imis quoque albo bifasciatis; facie rufa, nigro vix variegata; tarsis nudis, plus quam dimidio distali et digitis nudis. Long. tota circa 10·5, alæ 7·0, caudæ 3·85, tarsi 1·45. (Descr. exempl. ex Calobre, Panama. Mus. nostr.)

Hab. Costa Rica (*Arcé* [3 4]), La Carpintera, Cervantes (*U.S. Nat. Mus.* [9]), El Zarcero de Alajuela (*Zeledon* [7]), Irazu (*H. Rogers; C. F. Underwood, in mus. Rothschild*), Santa Ana (*C. F. Underwood*), San José (*Cherrie* [8]); Panama, Calobre (*Arcé* [4]).—Colombia (*fide Cassin* [10]).

Scops nudipes seems to be a species perfectly distinct from all other members of the genus, for not only is the coloration peculiar, but the greater part of the tarsi being naked, as well as the toes, renders it easily recognized.

Vieillot's figure of his *Bubo nudipes* is a very poor one, and was taken from a bird

said to have come from either San Domingo or Porto Rico [1]. It represents a very dark bird, but the terminal half of the tarsi being naked renders it more than probable that a specimen of this continental species was depicted. Vieillot subsequently changed his name to *Strix psilopoda* [11], assigning no reason for so doing.

(from Bogota in the Rivoli collection.)

Cassin identified a bird from Colombia as belonging to this species [10], but the only specimens we have seen have been from Costa Rica and the State of Panama. The former vary to a considerable extent in their markings, some being more conspicuously mottled below with white, some paler red above with more distinct dark marks, but all agree in having the naked tarsus. Besides the specimens obtained for us, Mr. Rothschild has several sent him by Mr. Underwood from Costa Rica.

Non cornuti.

CICCABA.

Ciccaba, Wagler, Isis, 1832, p. 1222.
Pulsatrix (subgenus), Kaup, Isis, 1848, p. 771.
Syrnium, Sharpe, Cat. Birds Brit. Mus. ii. p. 244 (partim).

The genus *Ciccaba* was founded by Wagler in 1832 with *Strix huhula*, Daud., as the type. In the diagnosis the comparatively small size of the ear-opening is referred to, a character at once separating *Ciccaba huhula* from true *Syrnium*. With the typical form we associate, as in the 'Nomenclator Avium Neotropicalium,' *Ciccaba virgata* and its allies and also *C. perspicillata*, which in that work is placed in a separate genus, *Pulsatrix*, Kaup. Should it hereafter be thought desirable to keep *C. virgata* and its allies distinct from true *Ciccaba*, a separation which may be justified, the name *Pulsatrix* may be used for *C. virgata* as well as *C. perspicillata*, though the latter remains the type.

Ciccaba belongs to the small-eared section of the Owls, which have no ear-tufts. In general appearance many of the species resemble some of the true *Syrnii* rather than the genera which follow—*Glaucidium* &c. They are, moreover, much larger birds, and may be distinguished at a glance. There are two well-marked sections of the genus, one of which is distinguished by its black plumage relieved by white transverse bars; the other has either the mottled plumage common to so many Owls or the brown-and-buff colour distinguishing *C. perspicillata* and *C. melanonota*.

Of the first section, one species, *C. nigrolineata*, ranges from Southern Mexico to Colombia; the type of *Ciccaba*, *C. huhula*, is found only in the northern portion of South America: a third, *C. spilonota*, is also found in Colombia, but probably lives in a distinct district from *C. nigrolineata*, divided by a high mountain-range; it is intermediate between the other two, but can be easily recognized from either.

Of the second section, *C. perspicillata* has a wide range in Central America and reaches the Mexican State of Vera Cruz; it also spreads over nearly the whole of Tropical South America. Of our other two species, *C. virgata* extends far into the

Eastern Mexican State of Tamaulipas, and thence spreads over the whole of Central America to Colombia and Venezuela; *C. squamulata* is confined to Western Mexico from the Isthmus of Tehuantepec to the State of Sinaloa. These two species have four or five allies in South America, occupying the greater portion of the tropical part of that continent.

A. *Ptilosis nigra, albo transfasciata.*

1. Ciccaba nigrolineata.

Ciccaba huhula, Scl. P. Z. S. 1858, p. 96 (nec Daudin) [1].

Syrnium nigrolineatum, Scl. Trans. Z. S. iv. p. 268, t. 63 [2]; Sharpe, Cat. Birds Brit. Mus. ii. p. 276 [3]; Sumichrast, La Nat. v. p. 238 [4].

Ciccaba nigrolineata, Scl. P. Z. S. 1859, p. 131 [5]; Salv. Ibis, 1866, p. 195 [6]; P. Z. S. 1870, p. 216 [7]; Lawr. Ann. Lyc. N. Y. ix. p. 132 [8]; Bull. U. S. Nat. Mus. no. 4, p. 37 [9]; v. Frantz. J. f. Orn. 1869, p. 366 [10]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 164 [11].

Supra nigra, alis et dorso vix brunneo tinctis; uropygio anguste albo transfasciato, cervice postica et corpore toto subtus albis, nigro frequenter transfasciatis, superciliis albo maculatis; alis extus albo anguste fasciatis, facie et mento nigris; cauda nigra, albo quadrifasciata; tibiis albo et nigro crebre fasciatis: rostro et digitis flavis. Long. tota circa 15·0, alæ 10·5, caudæ 6·5, tarsi 2·3. (Descr. exempl. ex Tapana, Tehuantepec. Mus. nostr.)

Juv. Capite summo et dorso toto albis, nigro, sicut corpore subtus, transfasciatis.

Hab. Mexico (*Verreaux* [15]), Jalapa (*Ferrari-Perez* [11]), Tapana, Sta. Efigenia [4], Cacoprieto [4], Tehuantepec city [9] (*F. Sumichrast*), Tapana (*Mus. Boston*); British Honduras, Cayo (*Blancaneaux*); Guatemala (*mus. Rothschild*), Mazatenango (*Dr. Bernoulli* [6]), Cahabon (*Champion*); Nicaragua, Mombacho (*W. B. Richardson*); Costa Rica [10], San José (*v. Frantzius* [8]); Panama, Boquete de Chitra (*Arcé* [7]).—Colombia (*Mus. Brit.*).

Ciccaba nigrolineata belongs to a small but peculiar section of the genus distinguished by their black-and-white plumage, unrelieved by any other colour. It has a near ally in *C. huhula* of South America, to which the first specimens procured were attributed [1], but was soon after separated by Mr. Sclater and figured in the 'Transactions of the Zoological Society of London' [2]. The chief points of difference are its uniform dark back and head, on which are no narrow white cross-bands, and by the under surface being white with black cross-bands instead of the reverse, as in *C. huhula.*

Though widely distributed in our region, it is nowhere common, and specimens have reached us at rare intervals. The original type formed part of a collection received by Verreaux from some part of Mexico [2]; Don Fernando Ferrari-Perez found it at Jalapa, and Sumichrast in several instances on the Isthmus of Tehuantepec. M. Blancaneaux sent us a skin from Cayo, on the Belize river, in British Honduras. In Guatemala we have only two records of it. In one case the late Dr. Bernoulli gave us two specimens which he had procured near the village of Mazatenango, in the Costa Grande, where he was then living. Another came from the other side of the country, from Cahabon, where it was obtained by Mr. Champion during his entomological journey to that part

of Vera Paz. Quite recently Mr. Richardson sent us a skin which he secured on the Volcano of Mombacho, in Western Nicaragua, and it has been recorded both from Costa Rica and the State of Panama. It also occurs in trade collections from Bogota with the allied form *C. spilonota*; but these birds are not likely to be found together, but in different valleys, *C. nigrolineata* probably occurring in the Magdalena Valley.

Of the habits of this Owl nothing has been recorded. According to Sumichrast the iris in life is black.

B. *Ptilosis brunnea et cervina, aut brunnea cervino variegata.*

2. Ciccaba perspicillata.

Spectacle Owl, Lath. Gen. Syn. Suppl. p. 50, t. 107 [1].

Strix perspicillata, Lath. Ind. Orn. i. p. 58 [2].

Syrnium perspicillatum, Scl. & Salv. Ibis, 1859, p. 222 [3]; P. Z. S. 1864, p. 370 [4]; 1867, p. 280 [5]; Lawr. Ann. Lyc. N. Y. vii. p. 289 [6]; ix. p. 132 [7]; v. Frantz. J. f. Orn. 1869, p. 366 [8]; Sharpe, Cat. Birds Brit. Mus. ii. p. 277 [9]; Sumichrast, La Nat. v. p. 238 [10].

Chouette à masque noir, Levaill. Ois. d'Afr. i. p. 172, t. 44 [11].

Strix torquata, Daud. Traité, ii. p. 193 [12].

Ciccaba torquata, Scl. P. Z. S. 1857, p. 227 [13]; v. Frantz. J. f. Orn. 1869, p. 366 [14].

Pulsatrix torquata, Salv. P. Z. S. 1870, p. 216 [15]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 38 [16]; Nutting, Pr. U. S. Nat. Mus. v. p. 403 [17]; vi. p. 388 [18]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [19].

Supra brunnea, alis et dorso indistincte fusco fasciatis; cauda fasciis sex notata; superciliis, loris elongatis, gula et abdomine toto cervinis (hoc interdum brunneo transfasciato); alis subtus cervinis, remigibus saturate brunneis. Long. tota circa 18·0, alæ 13·8, caudæ 7·5. (Descr. feminæ ex Calovevora, Panama. Mus. nostr.)

Juv. Plerumque cervina, facie tota nigerrima.

Hab. Mexico, Atoyac (*Mrs. H. H. Smith*), Santecomapam (*Boucard* [13]), Omealca, Uvero [10], Tehuantepec, Santa Efigenia [10 16] (*Sumichrast*); British Honduras, Cayo in the western district (*Blancaneaux*); Guatemala, Choctum, Escuintla [3] (*O. S. & F. D. G.*); Salvador, La Libertad (*W. B. Richardson*); Nicaragua, Sucuyá (*Nutting* [18]), Blewfields (*Wickham* [5]), Chinandega, Momotombo, San Emilio (*W. B. Richardson*); Costa Rica [8], Nicoya (*Arcé*), Bebedero (*C. F. Underwood, in mus. Rothschild*), Las Anonas (*v. Frantzius* [14], *Zeledon* [7]), La Palma (*Nutting* [17]), Angostura (*Zeledon* [19]); Panama, Chitra [15], Castillo [15], Bugaba [15], Calobre (*Arcé*), Lion Hill (*M'Leannan* [4 6]).—South America generally, from Colombia and Guiana to Brazil [9].

The Spectacle Owl, as Latham calls this species [1], is one of the commonest and best-known of the Owls of South America, where it enjoys a wide range. It is also distributed over the whole of Central America, South-eastern Mexico as far as the middle of the State of Vera Cruz, and probably beyond to the limits of the forests of that region.

In Guatemala we met with it on both sides of the mountain-range, but only in the

lowland forests up to about 1500 feet above the sea. Mr. Richardson has sent us skins from Salvador and from several places in Nicaragua, in which country Mr. Nutting met with two specimens at Sucuyá [18]. The same collector also says [17] it is not common at La Palma in Costa Rica, where he shot a bird out of a high tree in thick forest.

The iris in life is yellow.

3. Ciccaba virgata.

Syrnium virgatum, Cassin, Pr. Ac. Phil. 1848, p. 124 [1]; Journ. Ac. Phil. (2) ii. p. 51, t. 3 [2]; Scl. P. Z. S. 1856, p. 285 [3]; 1859, p. 368 [4]; Scl. & Salv. Ibis, 1859, p. 221 [5]; P. Z. S. 1864, p. 370 [6]; Lawr. Ann. Lyc. N. Y. vii. p. 317 [7]; ix. p. 132 [8]; v. Frantz. J. f. Orn. 1869, p. 366 [9]; Sharpe, Cat. Birds Brit. Mus. ii. p. 273 [10]; Sumichrast, La Nat. v. p. 237 [11]; Boucard, P. Z. S. 1883, p. 456 [12]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 164 [13]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [14]; Cherrie, Auk, 1892, p. 327 [15]; Richm. Pr. U. S. Nat. Mus. xvi. p. 520 [16].

Ciccaba virgata, Salv. P. Z. S. 1870, p. 216 [17]; Ibis, 1874, p. 318 [18]; 1889, p. 374 [19]; 1890, p. 89 [20].

Syrnium lineatum, Lawr. Ann. Lyc. N. Y. vii. p 462 [21].

Supra fusca, sordide cervino undique vermiculata, scapularibus extrorsum albo distincte maculatis; facie rufo-fusca, fusco variegata, margine suo et superciliis albo variegatis: subtus cervino-albida, pectore toto fusco et albido striato et variegato; abdomine albicantiore, magis distincte fusco striato; tarsis fulvis, fusco maculatis; cauda nigricante, fasciis quatuor fusco-albidis notata. Long. tota circa 14·0, alæ 9·0, caudæ 5·3, tarsi 1·9. (Descr. maris ex Calderas, Volcan de Fuego, Guatemala. Mus. nostr.)

Hab. Mexico, Sierra Madre above Ciudad Victoria in Tamaulipas, Tampico (*W. B. Richardson*), Jalapa (*de Oca* [4], *Ferrari-Perez* [13], *Trujillo*), Cofre de Perote (*Trujillo*), Orizaba (*Boucard*, *Sumichrast* [11]), Cordova (*Sallé* [3]), Vera Cruz (*W. B. Richardson*), Cacoprieto, Sta. Efigenia, Tehuantepec, Tapana (*Sumichrast* [11]), Tuxtla in Chiapas (*W. B. Richardson*), Teapa in Tabasco (*Mrs. H. H. Smith*), Izamal [12], Calotmul, Meco [19 20] in N. Yucatan [12] (*G. F. Gaumer*); British Honduras, Orange Walk, San Felipe in the western district (*F. Blancaneaux*); Guatemala (*Skinner* [5]), Choctum and Coban in Vera Paz, Calderas on Volcan de Fuego, Dueñas, Savana Grande, Retalhuleu (*O. S. & F. D. G.*); Nicaragua, San Rafael del Norte (*W. B. Richardson*), R. Escondido (*Richmond* [16]); Costa Rica (*Carmiol*), San José (*Zeledon* [14], *Cherrie* [15]), Liberia, Alajuela, Cartago (*Zeledon* [14]), Irazu (*Rogers; C. F. Underwood, in mus. Rothschild*), Dota Mts. (*v. Frantzius* [9], *Zeledon* [8]), Exazu, Santa Rosa (*C. F. Underwood, in mus. Rothschild*); Panama, Volcan de Chiriqui, Bugaba [17], Chitra [17], Calovevora [17], Calobre [17] (*Arcé*), Panama Railway (*M'Leannan* [6 7 21]).—Colombia; Venezuela [10].

This is by far the commonest species of *Ciccaba* in our country, occurring in the whole of the forest area, except perhaps in the higher mountains and in Western Mexico, where its place is taken by the closely allied *C. squamulata*. In Mexico it reaches as far north as the hills above Ciudad Victoria in Tamaulipas, and thence extends throughout the State of Vera Cruz to the eastern side of the Isthmus of

Tehuantepec. It is found on both sides of the central chain of the mountains of Guatemala and as high as 7000 feet on the slopes of the Volcan de Fuego. Mr. Richardson has sent us specimens from San Rafael del Norte in Northern Nicaragua, and Mr. Richmond found it on the Escondido river near the east coast [16]. In Costa Rica Mr. Cherrie says it is tolerably common and resident near San José, where nesting probably begins in the latter part of April, as young birds are found by the 1st of June [15]. In the State of Panama it is a common bird, and we have received many specimens both from Arcé and M'Leannan.

C. virgata is a very variable species both as to the general colour of its plumage and to the intensity of its markings. Lawrence separated the Panama bird as *Syrnium lineatum* *, considering it a smaller bird than *C. virgata*; the upper plumage not so dark, greyish, and the markings much smaller and more numerous, the under surface more rufous, with fewer and less distinct stripes. Birds with some or all of these characters can be found in almost any portion of the range of the species.

The iris of a female shot in September 1873 on the Volcan de Fuego was dark brown, the food coleoptera.

4. Ciccaba squamulata.

Strix squamulata, Licht. in Mus. Berol.[1].

Syrnium squamulatum, Bp. Consp. Av. i. p. 53 [2]; Sumichrast, La Nat. v. p. 237 [3].

Ciccaba squamulata, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 37 [4].

Syrnium virgatum, Lawr. Mem. Bost. Soc. N. H. ii. p. 298 [5].

C. virgatæ similis, sed supra fasciis omnibus multo magis distinctis; subtus albicantior, striis abdominis magis obviis plumarum marginibus haud fusco variegatis. (Descr. exempl. ex Tehuantepec, Mexico. Mus. nostr.)

Hab. Mexico [1], Mazatlan (*Grayson* [5]), Presidio de Mazatlan (*Forrer*), Sierra de Nayarit (*W. B. Richardson; Dr. A. C. Buller, in mus. Rothschild*), Hacienda de San Marcos, near Zapotlan (*W. Lloyd*), Hacienda del Lazo, Acatan (*Dr. A. C. Buller, in mus. Rothschild*), Colima (*Xantus* [5]), Plains of Colima, Tehuantepec (*W. B. Richardson*), Tehuantepec city (*Sumichrast* [3 4]).

Lawrence was the first to associate Sumichrast's specimens of this Owl from Tehuantepec with Bonaparte's description of *Syrnium squamulatum* [4], a name adopted from Lichtenstein. We have now several specimens from the same district, and we think they sufficiently differ from *C. virgata* to bear a distinct title; and, moreover, we trace the same bird northwards along the western States of Mexico as far as Mazatlan, whence Mr. Forrer sent us specimens which agree with the Tehuantepec birds. From this fact it follows that the birds of Grayson and Xantus from Western Mexico ascribed by Lawrence [5] to *Syrnium virgatum* also belong to *C. squamulata*.

It will be noticed that both these species of Owl are found on the Isthmus of

* Not *Surnia lineata*, Less. Traité d'Orn. p. 101, which is *Ciccaba huhula* (Daudin).

Tehuantepec; but it is very probable that they do not occur together, but that *C. virgata* belongs to the eastern or Atlantic side, and *C. squamulata* to the western or Pacific side of the Isthmus.

SPEOTYTO.

Speotyto, Gloger, Handb. Naturg. p. 226 (1842); Sharpe, Cat. Birds Brit. Mus. ii. p. 142.
Pholeoptynx (subgenus), Kaup, Isis, 1848, p. 769.

This genus is strictly confined to America, being distributed over the western and southern parts of the northern continent, Mexico, and Central America, except, perhaps, the southern portion, a large part of South America, including Argentina and Chili, and several of the West Indian islands. Its habit of living in deserted burrows of rodents and armadillos is peculiar amongst American Owls. Living chiefly on the ground the tarsi are longer in proportion than in any other genera; they are feathered in front, bare behind. The size is small, the head without ear-tufts; the cere is tumid, the nostril in the middle of the swollen part. The plumage is of very uniform pattern, but there is some variation in tint and a considerable amount in size in different individuals. The first primary is long.

1. Speotyto cunicularia.

Strix cunicularia, Molina, Stor. Chili, p. 343[1]; Bp. Am. Orn. i. p. 68, t. 7. f. 2[2].
Athene cunicularia, Bp., Grayson, Pr. Bost. Soc. N. H. xiv. p. 270[3].
Speotyto cunicularia, Sumichrast, La Nat. v. p. 237[4]; Sharpe, Cat. Birds Brit. Mus. ii. p. 142[5].
Athene hypogæa, Woodh. in Sitgr. Exp. Zuñi & Col. Rivers, p. 62[6]; Scl. P. Z. S. 1857, p. 201[7]; Salv. Ibis, 1865, p. 193[8].
Pholeoptynx hypogæa, Scl. P. Z. S. 1859, p. 368[9]; Scl. & Salv. Ibis, 1860, p. 401[10]; Dugès, La Nat. i. p. 138[11].
Speotyto cunicularia, var. *hypogæa*, Lawr. Mem. Bost. Soc. N. H. ii. p. 297[12]; Bull. U. S. Nat. Mus. no. 4, p. 37[13]; Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 90[14].
Speotyto cunicularia hypogæa, Bendire, Life Hist. N. Am. Birds, i. p. 395, t. 12. f. 14[15]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 787[16]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 189, t. 25[17]; Allen, Bull. Am. Mus. N. H. v. p. 34[18].

Supra brunnea, undique albido maculata, auricularibus fuscis; gula alba, fascia nigra notata; pectoris lateribus fuscis albo maculatis, hypochondriis fuscis transfasciatis, corpore reliquo subtus pallide cervino-albido; alis fuscis, primariis in pogonio externo cervino-albido maculatis; cauda fasciis quinque albidis nigricante marginatis notata; tarsis antice plumosis, ad digitos setosis. Long. tota circa 9·0, alæ 6·5, caudæ 2·9. (Descr. exempl. ex Dueñas, Guatemala. Mus. nostr.)

Hab. North America, Western States, Texas[14].—Mexico, San Pedro Sonora (*Robinette*[18]), Nuevo Laredo in Nuevo Leon (*F. B. Armstrong*), Carnetas in Chihuahua (*W. Lloyd*), Zacatecas (*W. B. Richardson*), Hacienda Angostura in San Luis Potosi (*Jouy*[16]), Tres Marias Is.[3 12], Mazatlan[12] (*Grayson*), Presidio de Mazatlan (*Forrer*), Ixtlan, Venta del Astillero (*Dr. A. C. Buller, in mus. Rothschild*), Guanajuato, Guadalajara (*Dugès*[11]), Santana near Zapotlan (*W. Lloyd*), Plains of Colima (*W. B. Richardson*), Jalapa (*Sallé*[7], *de Oca*[9], *Ferrari-Perez*), Cofre de Perote,

Orizaba (*Sumichrast* [4]), Puebla (*Boucard*), Playa Vicente (*M. Trujillo*), Tehuantepec, Chimalapa (*W. B. Richardson*), Juchitan [13], Cacoprieto (*Sumichrast* [4]); Guatemala, Chiapam [8], San José de Guatemala, Dueñas, San Gerónimo [10], Lanquin [10] (*O. S. & F. D. G.*).—South America generally to Argentina and Chili.

The typical form of this Owl is found in Chili, and the birds from that country are, as a rule, larger than those from other parts of its range. Chiefly on this account the North-American birds have been separated as belonging to a distinct race under the name of *S. hypogæa*. They are rather small, but do not differ materially from southern birds, individuals from the extreme limits of the range being practically undistinguishable so far as colour is concerned, and the difference in size is but slight. The most distinct forms we have seen are *S. cunicularia guadaloupensis* of Ridgway and the Florida bird, and these two seem capable of definition.

S. cunicularia, as we prefer to call this Owl, is found in all suitable localities throughout Mexico, from the sea-shore at Mazatlan and the Tres Marias Islands to open country in the mountains; but though it has not been observed in the Valley of Mexico, Jouy saw their mounds spread over a considerable portion of a barren plain in San Luis Potosi [16]. Grayson noticed it along the open sea-beach at night on the Tres Marias Islands, where it was in search of small crabs which formed its chief subsistence. It was in a similar place that one was observed by us near Champerico, on the Pacific coast of Guatemala, sitting at the opening of a burrow in the sand [8]. In the interior of Guatemala it is by no means common, and only on a few occasions came under our observation. Specimens were secured at Dueñas and San Gerónimo, and one was found lying in a decayed state on the thatch of an Indian rancho in the village of Lanquin [10]. All these places are in open country. We have no record of the occurrence of *S. cunicularia* in any other part of Central America, though it can hardly fail to occur in suitable places, seeing that it reappears in Colombia, and is found in many places over a wide area in the more open country of South America. It flies frequently by day as well as by night, and its food chiefly consists, at least in inland countries, of small mammals. The story of its living peacefully in the same burrow with prairie-dogs and rattlesnakes is now wholly discredited.

There is a good description of the habits of the Floridan form by Mr. S. N. Rhoads in the volume of the 'Auk' for 1892, p. 1.

GLAUCIDIUM.

Glaucidium, Boie, Isis, 1826, p. 970; Sharpe, Cat. Birds Brit. Mus. ii. p. 188.

Glaucidium is a genus of very wide distribution, which includes a large portion of the Old World as far east as the Indo-Malayan subregion; but it is not represented in New Guinea or any part of the Austro-Malayan subregion or in Australia, or any of the islands of the Pacific Ocean. In America it is spread over nearly the whole of the

Neotropical region, and is represented in Chili by a distinct species, another being found in Cuba. In Central America and Mexico four species occur, of which *G. phalænoides* is far the most abundant and widespread. As in many other genera of Owls, nearly all the species possess grey and rufous individuals, most of which at one time or another have had distinct names applied to them. These have now found their proper position, chiefly due to the studies of Dr. Sharpe and Mr. Ridgway. In the following arrangement we differ to a slight extent from both these authorities, but our conclusions being derived from the examination of a very extensive series of specimens seem amply justified.

With the exception of the next genus, which is a slight modification of the present one, *Glaucidium* contains the smallest of the American Owls. With no ear-tufts and small ear-opening it belongs to the same section of the family as *Speotyto*, but differs in having much shorter tarsi, due doubtless to the arboreal life led by its members; the wings are more rounded, the first or outer primary being short.

Of the four species of our country, *G. phalænoides* is found nearly everywhere; *G. gnoma* belongs to Mexico, chiefly the western part, and Guatemala; *G. griseiceps*, a local form of the South-American *G. pumilum*, is found in British Honduras, Guatemala, and Panama; and *G. jardinii*, of North-western South America, occurs in Costa Rica alone.

A. *Pileus striatus.*

1. Glaucidium phalænoides.

Strix phalænoides, Daud. Traité, ii. p. 206 [1].

Glaucidium phalænoides, Salv. P. Z. S. 1870, p. 217 [2]; Ibis, 1889, p. 374 [3]; 1890, p. 89 [4]; Sharpe, Cat. Birds Brit. Mus. ii. p. 203 [5]; Boucard, P. Z. S. 1883, p. 456 [6]; Ridgw. Pr. U. S. Nat. Mus. v. p. 501 [7]; x. p. 593 [8]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 164 [9]; Herrera, La Nat. (2) i. pp. 178, 321 [10]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [11]; Bendire, Auk, 1888, p. 366 [12]; Life Hist. N. Am. Birds, i. p. 409, t. 12. f. 17 [13]; Stone, Pr. Ac. Phil. 1890, p. 205 [14]; Cherrie, Auk, 1892, p. 327 [15]; Fisher, Bull. U. S. Dep. Agr. no. 9, p. 199 [16].

Athene infuscata (Temm.), Scl. P. Z. S. 1856, p. 285 [17].

Glaucidium infuscatum, Scl. & Salv. Ibis, 1859, p. 220 [18]; Lawr. Ann. Lyc. N. Y. ix. p. 207 [19].

Glaucidium ferrugineum, Lawr. Mem. Bost. Soc. N. H. ii. p. 297 [20]; Bull. U. S. Nat. Mus. no. 4, p. 37 [21].

Glaucidium jardinii, Scl. & Salv. Ibis, 1859, p. 220 (nec Bp.) [22].

Glaucidium gnoma, Cab. J. f. Orn. 1862, p. 336 [23]; v. Frantz. J. f. Orn. 1869, p. 336 [24]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 37 [25]; Sumichrast, La Nat. v. p. 237 [26].

Glaucidium infuscatum, var. *gnoma*, Ridgw. Pr. Bost. Soc. N. H. 1873, p. 63 [27]; Lawr. Mem. Bost. Soc. N. H. ii. p. 298 [28].

Glaucidium ridgwayi, Sharpe, Ibis, 1875, pp. 55 [29], 259 [30]; Cat. Birds Brit. Mus. ii. p. 205 [31]; Sumichrast, La Nat. v. p. 237 [32].

Glaucidium, sp., Salv. P. Z. S. 1867, p. 158 [33].

Supra griseo-umbrinum, interscapulio immaculato, uropygio rufescentiore, capite toto summo albo striato,

plumis nuchalibus medialiter albis torquem semicelatum formantibus, scapularibus in pogonio externo albo maculatis; alis albido fasciatis; cauda nigricante, albo septies fasciata: subtus album, pectoris lateribus et hypochondriis fusco striatis, subcaudalibus albis fusco guttatis. Long. tota circa 6·0, alæ 3·6, caudæ 2·3, tarsi 0·9. (Descr. exempl. ex Veraguas, Panama. Mus. nostr.)

Forma hepatica. Supra rufescens, capite toto summo pallide rufo striato; cauda fusco-rufa, pallide rufo regulariter transfasciata: subtus alba, lateribus fusco-rufo striatis. (Descr. exempl. ex Cordova, Mexico. Mus. nostr.)

Hab. North America, Texas.—Mexico, Rio Camacho, Rio Salado in Nuevo Leon (*F. B. Armstrong*), Sierra Madre above Ciudad, Victoria, Tampico (*W. B. Richardson*), Cañon de los Caballeros, near Victoria (*fide Sennett*), Misantla, Colipa (*F. D. G.*), Chietla [9], Plan del Rio [9], San Miguel Espejo [9], San José Acateno [9], Huatusco Santana, San Lorenzo (*Ferrari-Perez*), Laguna Verde, Vega del Casadero (*M. Trujillo*), Orizaba (*Sumichrast* [26]), Cordova (*Sallé* [17]), Atoyac (*Mrs. H. H. Smith*), Mazatlan (*Grayson* [20 28]), Presidio de Mazatlan (*Forrer*), Santiago de Tepic (*W. B. Richardson*), Tuzpan, Autlan, and Las Peñas in Jalisco (*Dr. A. C. Buller, in mus. Rothschild*), Colima (*Xantus* [20]), Chietla (*W. B. Richardson*), Tapanatepec, Sta. Efigenia [21], Gineta Mts.[21] (*Sumichrast* [32]), Sierra de Santo Domingo (*W. B. Richardson*), Tonala (*Sumichrast* [32], *W. B. Richardson*), Tuxtla and Tapachula in Chiapas (*W. B. Richardson*), Teapa (*Mrs. H. H. Smith*), Merida (*Schott* [9], *G. F. Gaumer* [6]), Peto, Izamal, Temax, Buctzotz (*G. F. Gaumer*), Tunkas (*Stone & Baker* [14]), Tabi (*F. D. G.*), Cozumel I. (*G. F. Gaumer* [3]); British Honduras, Southern Pine Ridge (*Blancaneaux*); Guatemala (*Skinner* [22]), Laguna [18], San Gerónimo, Dueñas, Volcan de Agua, above San Diego, El Paraiso (*O. S. & F. D. G.*); Nicaragua, Chontales (*Belt*), Segovia R. (*Townsend* [8]); Costa Rica (*Carmiol*), San José (*v. Frantzius* [24], *Nutting* [7], *Cherrie* [15]), Salitral, near San José (*Hoffmann* [23]), Alajuela, Cartago (*Zeledon* [11]); Panama, Calobre [2], Santa Fé [33] (*Arcé*).—South America generally, from Colombia, Trinidad, and Guiana to Paraguay.

All specimens from the lower Rio Grande Valley and North-eastern Mexico examined by us have the tail of the ordinary hepatic type as seen in southern examples, but the head and back are not nearly so rufous nor are they so grey as southern birds in that phase. In the State of Vera Cruz dark-tailed birds begin to appear and are found everywhere to the southward of that State.

Dr. Sharpe separated the Mexican and Central American bird under the title of *G. ridgwayi*, keeping the South-American bird and that of the island of Trinidad distinct subspecies, calling them *G. ferox* (Vieill.) and *G. phalœnoides* (Daud.) respectively. But admitting, as everyone must, a large amount of variation between individuals of this Owl, we are not able, with the very large series of specimens before us, to select any characters by which these races can be satisfactorily distinguished. The range would appear to be quite unbroken from the Rio Grande of Texas to Paraguay.

Daudin's name *G. phalœnoides*, bestowed upon the bird of the island of Trinidad in 1800, is the oldest [1].

Capt. Bendire gives a *résumé* of the little that is known of the habits of this species, chiefly taken from Euler's notes made in Brazil. A hen bird and egg were secured by Mr. G. B. Sennett's collector at Cañon de los Caballeros, near Victoria in Tamaulipas. The nest was in a hollow tree growing at the base of the high mountains of that district. Other eggs were subsequently obtained from a nest in an old Woodpecker's hole in a mesquit tree near Brownsville, Texas.

B. *Pileus guttatus.*

2. Glaucidium gnoma.

Glaucidium gnoma, Wagl. Isis, 1832, p. 275 [1]; Sharpe, Ibis, 1875, pp. 38 [2], 259, t. i. ff. 1, 2 [3]; Cat. Birds Brit. Mus. ii. p. 194 [4].

Glaucidium ferrugineum, Lawr. Mem. Bost. Soc. N. H. ii. p. 297 [5].

Glaucidium infuscatum, var. *gnoma*, Lawr. Mem. Bost. Soc. N. H. ii. p. 298 [6].

Glaucidium ridgwayi, juv., Sharpe, Ibis, 1875, p. 47 [7].

Glaucidium cobanense, Sharpe, Ibis, 1875, pp. 259, 260 [8]; Cat. Birds Brit. Mus. ii. p. 199, t. 13. f. 1 [9].

Glaucidium fisheri, Nelson & Palmer, Auk, xi. p. 41 [10].

Supra murinum, capite toto summo grisescentiore albo guttato; torque nuchali celato albo, rufo marginato; scapularibus extus albo maculatis, alis extus cervino-albo maculatis; cauda nigricante, septies albo transfasciata, striis medialiter interruptis: subtus album, lateribus fusco striatis. Long. tota circa 6·0, alæ 3·6, caudæ 2·5. (Descr. maris ex Sierra Madre de Tepic, Mexico. Mus. nostr.)

Forma hepatica. Supra rufescens, fere unicolor, capite summo indistincte fulvo guttato; cauda nigricante, fulvescenti-albido septies transfasciata, fasciis medialiter interruptis: subtus alba, lateribus rufo striatis. (Descr. exempl. ex Coban, Guatemala. Mus. nostr.)

Hab. Mexico (*Dr. Petz* [1]), Mazatlan (*Grayson* [5 6]), Las Peñas in Jalisco (*Dr. A. C. Buller, in mus. Rothschild*), Sierra Madre de Tepic, Sierra Nevada de Colima (*W. B. Richardson*), Colima (*Xantus* [6]), Tenango del Valle (*W. B. Richardson*), Chimalpa (*Ferrari-Perez*), Puebla (*Nelson & Palmer* [10]), Venta de Zopilote, Omilteme (*Mrs. H. H. Smith*), Comitan in Chiapas (*W. B. Richardson*); Guatemala, Coban (*Bouvier* [8 9], *O. S. & F. D. G.*), Choctum, Dueñas, Volcan de Fuego (*O. S. & F. D. G.*).

This species may be distinguished from *G. griseiceps* by its longer tail, measuring 2·5 inches instead of 2·0, and by the greater number of bands upon it.

In North America it has an ally in *G. californicum*, which has often been confused with it. *G. californicum*, which does not seem to occur in Mexico, is much more uniformly grey above, the head and back are more distinctly spotted, the tail measures 3·0 inches, the sides of the head, the dark gular patch, and the flanks are more distinctly spotted. Moreover, so far as we know, *G. californicum* has no hepatic phase.

From true *G. phalænoides* the present species may be readily distinguished by the head being spotted instead of striped.

Regarding Dr. Sharpe's *G. cobanense*, which is no doubt a strongly hepatic form of some species of *Glaucidium*, we are of opinion that it is that phase of *G. gnoma*, the head being but slightly marked; it may be distinguished from the hepatic phase of *G. phalænoides* by the colour of the tail, which resembles that of the grey phase, and is not evenly and regularly banded as in the hepatic *G. phalænoides*.

Mexican birds of this species differ slightly from Guatemalan examples in having larger scapular and wing-spots, but the variation is slight and merely worthy of note.

3. Glaucidium griseiceps.

Glaucidium pumilum, Ridgw. Pr. Bost. Soc. N. H. xvi. p. 57 (partim, nec Temm.) [1].

Glaucidium griseiceps, Sharpe, Ibis, 1875, pp. 41, 259, t. 2. f. 2 [2]; Cat. Birds Brit. Mus. ii. p. 196 [3].

G. gnomæ similis, sed cauda breviore, fasciis tantum quatuor aut quinque incompletis notata; striis abdominis plerumque rufescentioribus. Long. tota circa 6·0, alæ 3·4, caudæ 2·15. (Descr. exempl. ex Choctum, Guatemala. Mus. nostr.)

Hab. British Honduras, Southern Pine Ridge, western district (*Blancaneaux*); Guatemala (*Bouvier* [3]), Chisec, Choctum (*O. S. & F. D. G.*); Panama, Veraguas (*Arcé* [3]).

This Owl was formerly considered to be identical with *G. pumilum* of South America, but Dr. Sharpe separated it on the ground of its greyer head [2]. Its range does not extend much beyond the department of Vera Paz, though Blancaneaux obtained a specimen in Western British Honduras, faunistically an extension of Eastern Guatemala. Southwards we trace it to the State of Panama, though it has not yet been detected in Nicaragua or Costa Rica.

4. Glaucidium jardinii.

Phalænopsis jardinii, Bp. Compt. Rend. xli. p. 654 [1].

Glaucidium jardinii, Cab. J. f. Orn. 1869, p. 208 [2]; Ridgw. Pr. Bost. Soc. N. H. xvi. p. 59 [3]; Pr. U. S. Nat. Mus. vi. p. 415 [4]; Sharpe, Ibis, 1875, pp. 43 [5], 259 [6]; Cat. Birds Brit. Mus. ii. p. 207 [7]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [8].

Supra murino-brunneum (capite dilutiore), omnino pallide cervino maculatum; torque cervicali albida, fulvo marginata; alis extus cervino maculatis: subtus gula et pectore medio albis, facie, torque gulari, pectoris lateribus et hypochondriis fulvo et nigro variegatis; cauda nigricante, fasciis sex maculosis albis transfasciata. Long. tota circa 6·0, alæ 2·6, caudæ 2·15. (Descr. maris ex Rancho Redondo, Costa Rica. Mus. nostr.)

Hab. Costa Rica (*Van Patten* [4]), Cartago (*Zeledon* [8]), Rancho Redondo, Irazu (*C. F. Underwood*).—Colombia [7]; Venezuela; Ecuador [1].

A very distinct species, easily recognized by its dark colour and mottled back from the other American members of the genus. Its range in South America extends from Ecuador northwards to Colombia and Venezuela, and thence passes into the Isthmus of Panama to the mountains of Costa Rica, where it appears to be not uncommon. It is probably everywhere a mountain species, in South America not leaving the slopes of the Northern Andes.

MICROPALLAS.

Micrathene, Coues, Pr. Ac. Phil. 1866, p. 15 (nec Sundevall); Sharpe, Cat. Birds Brit. Mus. ii. p. 224.

Micropallas, Coues, Auk, 1889, p. 71.

Micropallas contains two closely allied species, which are the smallest of the Striges. One of these is found in the South-western States of North America, Texas, and Lower California, and in Mexico as far as Guanajuato and Puebla. The other has as yet only been noticed on the island of Socorro. The genus is closely allied to *Glaucidium*, but has a tarsus longer in proportion to the middle toe, scantily haired instead of densely feathered, and a shorter more even tail.

Dr. Coues's name *Micrathene*, first proposed for this genus, being subsequently found by its author too much like *Micrathena* of Sundevall, he substituted *Micropallas* for it, and under that title it has since passed.

1. Micropallas whitneyi.

Athene whitneyi, Cooper, Pr. Cal. Ac. Sc. ii. p. 118 (1861) [1].

Micrathene whitneyi, Coues, Pr. Ac. Phil. 1866, p. 51 [2]; Elliot, Birds N. Am. i. t. 29 [3]; Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 87 [4]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 165 [5]; Herrera, La Nat. (2) i. pp. 178, 321 [6].

Micropallas whitneyi, Bendire, Life Hist. N. Am. Birds, i. p. 411, t. 12. f. 13 [7]; Fisher, Bull. U. S. Dep. Agr. no. 9, p. 200 [8].

Supra griseo-brunnea, fulvo maculata; torque cervicali albido, scapularibus in pogonio externo albis; alis fulvo et albo maculatis, cauda fasciis maculosis sex notata; superciliis et macula utrinque menti albis, oculorum ambitu fulvo: subtus griseo-albida, fusco et fulvo irregulariter variegata et fasciata. Long. tota circa 5·5, alæ 4·4, caudæ 2·0, tarsi 0·75. (Descr. maris ex Tucson, Arizona. Mus. nostr.)

Hab. North America, Texas, Arizona, Southern and Lower California.—Mexico, Guanajuato (*A. Dugès* [5]), Valley of Mexico (*Herrera* [6]), San Salvador el Verde (*Ferrari-Perez* [5]).

First discovered near Mojave, California, in 1861, by Dr. J. G. Cooper [1], the Elf-Owl, as this little species is called, has since been found to inhabit an extended area stretching from near the mouth of the Rio Grande in Texas to Arizona and Lower California. In Texas it is apparently rare, but we have two specimens from that State sent us by Mr. F. B. Armstrong from Hidalgo. In Arizona it is said to be the commonest Owl of the district, whence most of the specimens that have been obtained have been sent. Here, too, it breeds in numbers, Mr. F. Stephens and Mr. W. E. D. Scott having found more than a dozen nests in about six hours near Tucson. The nest is almost invariably placed in a deserted Woodpecker's hole in the giant cactuses which abound in that country. The birds are nocturnal in habit and become active shortly after sundown. Their food is chiefly coleoptera and a few other insects, and occasionally small mammals. Capt. Bendire gives a full account of the

habits of *M. whitneyi*, partly from his own observations, partly from those of others, and Dr. Fisher also gives a similar summary in his excellent work on the Hawks and Owls of the United States.

From Mexico we have as yet heard little of this Owl, and no specimens have reached us from that country. It is said by Herrera to be found in the Valley of Mexico, and there is a specimen in the United States National Museum sent from Guanajuato by Prof. A. Dugès [5]. Prof. Ferrari-Perez also sent to the same museum an adult male obtained at San Salvador el Verde, in the State of Puebla [5].

2. Micropallas graysoni.

Micrathene whitneyi, Grays. Pr. Bost. Soc. N. H. xiv. p. 300 (nec Coues) [1]; Lawr. Mem. Bost. Soc. N. H. ii. p. 297 [2].

Micrathene graysoni, Ridgw. Pr. U. S. Nat. Mus. ix. p. 166 [3]; Auk, 1886, p. 333 [4].

M. whitneyi similis, sed multo brunnescentior haud griseo lavata, fasciis pallidis caudæ et area inter eas æqualibus.

Hab. Mexico, Socorro I. (*Grayson* [1 2 3 4]).

The Socorro-Island birds obtained by Grayson were long considered to belong to the continental *M. whitneyi*, till Mr. Ridgway separated them in 1886 [3]. We have never seen specimens of this form, and have taken our diagnosis from Mr. Ridgway's description [3]. Grayson obtained three specimens of this little Owl during his stay on Socorro Island. He says they were always found among the branches of low evergreen trees. He adds that they seem to feed entirely upon the small land-crabs which are abundant near the sea [2]. The iris in life is bright yellow [1].

Note.—In the 'Transactions of the Zoological Society' (vol. iv. p. 232) Kaup described an Owl from Mexico, which we do not recognize, as follows:—

"**Asio macrurus**, Kp.

"*Diagn.* The tail brown, 148 mm. long, with five small whitish bands and end.

"*Descr.* The upper parts dark brown, with two to three irregular rusty-yellow cross bands on each feather. The lower parts white, on each feather a broad dark-brown shaft-stripe. The under tail-coverts pure white. Wings on the inner sides blackish, with from three to five whitish pronged bands and spots. Tarsi rusty-yellowish white, with rusty-yellow cross-lines. The bristle-feathers of the *lorum* white with black shafts. The stripe over the eye dirty-white, extending to the ear-horns, which are not very well distinguished. Veil white, each feather with rusty-yellow black-margined shaft-spots.

"*Dimens.* Head 70, bill from the root 20, from the gape 34, wing 250, tarsus 60, middle toe without the nail 39, left ear-hole (taken on a stuffed specimen) 14, right ear-hole 22 mm. long.

"*Hab.* Mexico (*Würzburg Museum*)."

Order ACCIPITRES.

In the 'Nomenclator Avium Neotropicalium' this order is divided into two families, Falconidæ and Cathartidæ, including the genus *Pandion* in the former group. The position of this genus has always been a difficulty with systematists. Dr. Sharpe, in 1874, went so far as to place *Pandion* in a separate "suborder" Pandiones, as equivalent to the whole of his "Falcones" (=Accipitres of this work) and "Striges." Mr. Ridgway has a group Pandiones as a section of his subfamily Buteoninæ. Dr. Coues divides his order Raptores into three suborders, viz. Cathartidæ, Accipitres, and Striges; and the Accipitres he separates into Falconidæ and Pandionidæ, an arrangement we think the best, and is the one adopted here, except that having placed the Striges in a separate order we assign to the Accipitres the same rank, and with them we place the Cathartidæ.

Fam. PANDIONIDÆ.

The reversible outer toe and the absence of an aftershaft to the feathers render *Pandion*, the only member of this family, distinct from the rest of the Accipitres.

PANDION.

Pandion, Savigny, Syst. Ois. Egypte, p. 9 (1810); Sharpe, Cat. Birds Brit. Mus. i. p. 448; Coues, Key N. Am. Birds, ed. 2, pp. 498, 556.

Besides the characters given above, *Pandion* has close and firm plumage, the thighs closely feathered, and none of the feathers elongated as in most Falconidæ; the distal portion of the tarsi and the toes are naked, the feet large and strong, the claws very large and equal in length, not grooved beneath, but compressed, the middle claw grooved on its inner face; the bill has no notch or tooth at the end of the tomia, but the mandible is strongly hooked; the nostrils are oval, without tubercle, in the edge of the cere. The relative position of the distal ends of the coracoid, scapula, and furcula is the same as in the Buteonine section of the Falconidæ, the scapular process of the coracoid not reaching to the end of the furcula. This fact led Mr. Ridgway to place *Pandion* in his Buteoninæ.

With the possible exception of the small *Pandion leucocephalus* of Australia and New Guinea, there is only one species of this genus, the range of which is given below.

1. Pandion haliaetus.

Falco haliaetus, Linn. Syst. Nat. i. p. 129 [1].

Pandion haliaetus, Less. Man. d'Orn. i. p. 86 [2]; Sharpe, Cat. Birds Brit. Mus. i. p. 449 [3]; Salv. Ibis, 1889, p. 374 [4].

Falco carolinensis, Gm. Syst. Nat. i. p. 263[5].

Pandion carolinensis, Aud. Birds Am. t. 81[6]; Orn. Biogr. i. p. 413[7]; Scl. & Salv. Ibis, 1859, p. 215[8]; Lawr. Ann. Lyc. N. Y. viii. p. 2[9]; Salv. Ibis, 1864, pp. 378[10], 385[11]; 1865, p. 193[12]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 268[13]; Gundl. Orn. Cub. p. 39[14].

Pandion haliaetus, var. *carolinensis*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 184[15]; Lawr. Mem. Bost. Soc. N. H. ii. p. 303[16]; Bull. U. S. Nat. Mus. no. 4, p. 38[17]; Sumichrast, Nat. v. p. 237[18].

Pandion haliaetus carolinensis, Belding, Pr. U. S. Nat. Mus. vi. p. 344[19]; Nutting, Pr. U. S. Nat. Mus. vi. p. 377[20]; Herrera, La Nat. ser. 2, i. p. 320[21]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 520[22]; Bendire, Life Hist. N. Am. Birds, ii. p. 320[23]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 130, t. 18[24].

Supra fuscus, dorsi plumis stricte albido marginatis, capite toto et cervice flavido-albis, pileo medio, plaga cervicali, loris et stria lata postoculari fuscis: subtus albus, pectoris plumis plus minusve fusco maculatis interdum pure albis; alis fuscis, subtus introrsum albo et fusco transfasciatis, margine externo fusco, plumis omnibus albo limbatis, axillaribus albis; cauda indistincte fasciata: rostro et pedibus plumbeis. Long. tota circa 21·0, alæ 19·0, caudæ 8·5, tarsi 2·2. (Descr. exempl. ex Acapam, Guatemala. Mus. nostr.)

Hab. North America, generally distributed as far north as Hudson's Bay and Alaska[23].—Mexico, both Atlantic and Pacific coasts (*Sumichrast*), Guaymas (*Belding*[19]), Tres Marias Islands (*Grayson*[13], *Forrer*), Mazatlan (*Grayson*[16]), Colima (*Xantus*[16]), Tamaulipas (*W. B. Richardson*), Coyutla, Rio Rancho Nuevo, Santa Ana, Alvarado (*Ferrari-Perez*), Chalco, Xochimilco (*Herrera*), Ventosa Bay, Chihuitan (*Sumichrast*[17]), Holbox and Cozumel Island (*G. F. Gaumer*[4]); British Honduras, Belize (*O. S.*[8]), Half Moon Cay, Saddle Cay[10], Tobacco Cay[11], &c. (*O. S.*); Guatemala, both Atlantic and Pacific coasts (*O. S.*[8] *& F. D. G.*), Acapam (*O. S.*[12]); Honduras (*Dyson, in Mus. Brit.*[3]), Ruatan I. (*G. F. Gaumer*[4]), Amapala (*O. S.*); Nicaragua, east coast (*Richmond*[22]), San Juan del Sur (*O. S.*, *Nutting*[20]); Panama (*M'Leannan*[2]).—South America, northern parts; Old World, northern hemisphere generally.

The Osprey is a common bird on the coasts of Mexico and Central America, frequenting both the coral-lined shore of the Atlantic and the lagoons and estuaries which abound on that of the Pacific. Though a migrant in the north it is never absent from its haunts in the south, and in the winter season the numbers in southern districts are no doubt largely augmented by arrivals from colder climates.

Gundlach says[14] that birds arrive in Cuba from Florida about the beginning of September, but that there was evidence that others bred in the island.

Grayson, during his visits to the Tres Marias Islands[13], discovered two nests in the northernmost island, one of which was on a rock adjacent to the shore and had young in it; the other was on the top of the large thorny limbs of a giant cactus. On the mainland near Mazatlan, he says, the Osprey was quite common. Mr. Forrer procured a nestling on the Tres Marias Islands.

Further southwards, along the shore of Western Mexico, Xantus found *P. haliaetus* at Colima [16], and Sumichrast on the Isthmus of Tehuantepec [17].

On the eastern coast of Mexico the Osprey no doubt occurs from the Rio Grande to Yucatan and the islands off the coast. From the interior of Mexico we have not so many records; but Herrera tells us [21] that he obtained specimens at various times at Xochimilco, in the valley of Mexico, and that he was informed that the Osprey also occurred on the lake of Chalco, and that it arrives in September or October. It feeds on the fishes of the valley, each bird eating daily one or two *Antherina humboldti* and many small fish, leaving the heads of the larger kinds. Batrachians and other aquatic animals are not touched. The natives say that it chases and kills Kingfishers, but never devours them.

On the coast of British Honduras this species is very abundant, and one of the first birds Salvin secured on landing at Belize in December 1857 [8] was an Osprey, which, flying over the forest at the back of the town with a fish in its talons, fell to a charge of small shot. Nearly every one of the cays which stud this coast has its pair of Ospreys, and on Tobacco Cay, on the barrier-reef, Salvin saw a large nest which seemed to have been occupied for several years and added to from time to time [11].

When visiting the Pacific coast of Guatemala in 1863 Salvin again found this species in numbers—every lagoon inside the beach was tenanted by a pair. This was from San José and Champerico to Huamuchal near the frontier of Soconusco.

The most recent account of the Osprey in North America is given by Bendire [23] in his 'Life Histories of North-American Birds,' and Dr. Fisher has also drawn up a good summary of the observations concerning it [24]. As is well known, it builds a huge nest of sticks, and lays as many as three eggs, which are varied in shape and colour, the latter consisting of heavy blotches of various sizes and shades of a rich brown and vinous red on a whitish ground.

The American Osprey was separated from the European by Gmelin in the last century [5], and since then opinions have differed as to whether it is really distinct or not. Most American writers now call it *Pandion haliaetus carolinensis*, but Dr. Coues and Dr. Sharpe unite both forms under Linnæus's title *P. haliaetus*. The trifling larger size and the presence generally of a few less spots on the breast are all the characters that can be assigned to the American bird.

Fam. FALCONIDÆ *.

In the following arrangement of the Falconidæ we adhere to a great extent to the system of the 'Nomenclator Avium Neotropicalium,' which does not very materially differ from that adopted by Mr. Ridgway in his paper on the outlines of a natural

* At Mr. Salvin's death the MS. of the Falconidæ was in a forward state. It has been continued with the assistance of Dr. R. Bowdler Sharpe.

Read Aug. 14, 1899.

arrangement of the Falconidæ (1875); but by incorporating some of Mr. Ridgway's conclusions, this concordance is made closer.

We have, following Dr. Coues, already removed *Pandion* from this family. We now further modify our plan by using the curious character of the relative positions of the distal ends of the coracoid, scapular, and clavicle, first indicated by Huxley and subsequently brought into prominence by Mr. Ridgway, to separate *Micrastur* from the Accipitrinæ, and place it in a separate subfamily next *Herpetotheres*, and near the Falconinæ and the Polyborinæ. We also merge the Buteoninæ in the Aquilinæ, as Dr. Coues has done.

We thus have one group (A) consisting of four subfamilies, viz. Circinæ, Accipitrinæ, Aquilinæ, and Milvinæ, in which the scapular process of the coracoid does not meet the end of the clavicle, and another (B) also containing four subfamilies, viz. Herpetotherinæ, Micrasturinæ, Falconinæ, and Polyborinæ, in which the scapular process of the coracoid meets the end of the clavicle.

These eight subfamilies are represented in our region by thirty-three genera and about sixty-four species, a very large proportion of the genera and species of the Falconidæ of the world. Of the genera eight are widely spread and extend beyond the limits of America, seven are found in North as well as South America, and eighteen belong only to Mexico and Central America and the southern continent. The Falconidæ, therefore, of our region, as regards their genera, are much more nearly allied to those of South America than they are to those of North America; and as regards the species this relationship is more clearly shown, a large proportion of them being identical in the two regions.

Group A.

Subfam. *CIRCINÆ.*

This subfamily includes the Harriers (*Circus*) only, a compact group of birds with marked characteristics, of which the most evident is the disc or ruff which surrounds the face, as in the Owls. The members of the genus *Micrastur* also have this feature to a less extent, but they, again, are separated by the arrangement of the ends of the coracoid, scapular, and clavicle mentioned above.

CIRCUS.

Circus, Lacépède, Mém. de l'Inst. iii. p. 506 (1806); Sharpe, Cat. Birds Brit. Mus. i. p. 50.

A genus of very wide distribution, containing about fifteen species. These are spread over the temperate and tropical portions of all the larger land-areas of the world. In North America *Circus hudsonius* is the only species, and this, as shown below, ranges in winter as far south as the Isthmus of Panama. In South America two species occur.

The sexes in *Circus hudsonius* are very distinct in coloration, the male being a

smaller bird, and, in the adult dress, of a bluish-grey colour above. The body is slender, the wings and tail long. The legs are long and the tarsi slight. The middle toe is considerably longer than the others, the inner toe being longer than the outer.

1. **Circus hudsonius.**

The Ring-tailed Hawk, Edw. Birds, iii. t. 107 [1].

The Marsh Hawk, Edw. Glean. Nat. Hist. ii. t. 291. f. 2 [2].

Falco hudsonius, Linn. Syst. Nat. i. p. 128 [3].

Circus hudsonius, Vieill. Ois. Am. Sept. t. 9 [4]; Scl. P. Z. S. 1857, p. 211 [5]; 1859, p. 390 [6]; 1864, p. 178 [7]; Scl. & Salv. Ibis, 1859, p. 220 [8]; P. Z. S. 1864, p. 349 [9]; Lawr. Ann. Lyc. N. Y. vii. p. 317 [10]; ix. p. 134 [11]; Dugès, La Nat. i. p. 138 [12]; v. Frantz. J. f. Orn. 1869, p. 370 [13]; Salv. P. Z. S. 1870, p. 216 [14]; Cat. Strickl. Coll. p. 483 [15]; Sharpe, Cat. Birds Brit. Mus. i. p. 55 [16]; Gundl. Orn. Cub. p. 45 [17]; Sumichrast, La Nat. v. p. 235 [18]; Boucard, P. Z. S. 1883, p. 456 [19]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 166 [20]; Herrera, La Nat. (2) i. pp. 176, 320 [21]; Cherrie, Auk, 1892, p. 328 [22]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 26, t. 3 [23]; Bendire, Life Hist. N. Am. Birds, i. p. 183 [24]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 521 [25]; Allen, Bull. U. S. Nat. Mus. v. p. 34 [26]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 787 [27].

Circus cyaneus, var. *hudsonius*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 214 [28]; Lawr. Mem. Bost. Soc. N. H. ii. p. 298 [29]; Bull. U. S. Nat. Mus. no. 4, p. 43 [30].

Supra cærulescenti-cinereus, uropygio albo : subtus albus, pectore griseo, abdomine toto maculis sparsis sagittiformibus rufis notato ; tibiis aut albis aut plus minusve rufo fasciatis ; remigibus nigricantibus, subtus ad basin albis ; tectricibus et axillaribus vix griseo fasciatis ; cauda cinerea, nigricante subterminata, fasciisque sex incompletis transnotata : rostro corneo, pedibus flavis. Long. tota circa 19·0, alæ 13·5, caudæ 9·0, tarsi 3·0. (Descr. maris ex Chapulco, Puebla, Mexico. Mus. nostr.)

♂ *juv.* ♀ similis, sed minor et subtus pallidior.

♀ brunnea, uropygio albo ; pileo, cervice postico, scapularibus et tectricibus alarum minoribus fulvo notatis ; superciliis et macula infra oculos cervino-albis, faciei disco fusco et fulvo intermixto : subtus fulva, pectore fusco striato ; remigibus subtus albidis, cervino tinctis fusco transfasciatis ; subalaribus cervinis, fusco maculatis ; cauda fusca, rectricibus mediis fasciis pallidis notatis, rectricibus reliquis fasciis latis fulvis et fulvo terminatis : rostro corneo, pedibus flavis. Long. tota circa 20·0, alæ 15·0, caudæ 10·0, tarsi 3·3. (Descr. feminæ ex Dueñas, Guatemala. Mus. nostr.)

♀ *juv.* Subtus omnino fusco striata.

Hab. N. America generally [28].—Mexico (*T. Mann* [15], *Sumichrast* [18]), Rancheria de los Apaches (*Robinette* [26]), Hermosillo in Sonora (*Ferrari-Perez*), Carichic in Chihuahua (*W. Lloyd*), Mazatlan (*Grayson* [29]), Soledad in San Luis Potosi (*Jouy* [27]), Zacatecas (*W. B. Richardson*), Valley of Mexico (*White* [7], *Herrera* [21]), Chapulco, Puebla [20], San Baltazar, La Noria, Coapam (*Ferrari-Perez*), Guanajuato (*Dugès* [12]), Santana near Zapotlan (*W. Lloyd*), Volcan de Colima (*W. B. Richardson*), Orizaba (*Botteri* [5]), Jalapa (*de Oca*), Oaxaca (*Boucard* [6]), Cacoprieto, Tehuantepec city [30] (*Sumichrast*), Izalam in Yucatan (*G. F. Gaumer* [19]), Progreso (*Devis*) ; Guatemala (*Constancia* [15]), Dueñas [8], Quezaltenango, San Gerónimo (*O. S. & F. D. G.*), Atitlan, Panajachel (*W. B. Richardson*) ; Nicaragua, Rio Escondido (*Richmond* [25]) ; Costa Rica, San José (*Carmiol* [11], *Cherrie* [22]), Candelaria Mts. (*v. Frantzius* [13]) ;

Panama, Volcan de Chiriqui (*Arcé* [14]), Lion Hill (*M'Leannan* [9 10]).—Cuba; Bahama Is.

The Marsh-Hawk, under which name this Harrier is well known in North America, has a very wide range over that continent, the area occupied during the breeding-season embracing even the Arctic regions. In winter it is found as far north as 39° N. lat., east of the Rocky Mountains, and up to 46° on the Pacific coast [24]. In Mexico and Central America it occurs chiefly as a winter visitor, though a small number may remain to breed, as we have record of a bird killed as late as May 3rd at La Noria in the State of Sinaloa, at which time many northern birds had commenced their breeding-season. In Cuba it is also migratory, appearing abundantly in the winter months, when birds in immature plumage are seen much more frequently than adults.

In Guatemala *Circus hudsonius* is by no means a rare bird, and individuals may frequently be seen in open country, and especially in marshy tracts, flying in wide curves near the ground in search of food. Females and young birds are much more frequently seen than males, which are comparatively rarely met with.

In Costa Rica this Harrier is tolerably common from the beginning of October till the end of February.

Its habits have been very fully described in works on North American ornithology, the most recent being those of Capt. Bendire [24] and Dr. Fisher [23]. The last-mentioned author gives an analysis of the food of a large number of individuals, from which it appears that more than half of its diet consists of mice and other small mammals; a much smaller number of birds are eaten, and reptiles and frogs and some insects are also consumed. Its nest is built on the ground, usually in marshy places, and the number of eggs in a nest varies from three to as many as eight. They are white, with a greenish inner lining, and with spots and blotches of pale reddish-brown on the outer surface.

Subfam. *ACCIPITRINÆ*.

Dr. Coues defines this subfamily as follows:—"General form strict, with small head, shortened wings, and lengthened tail and legs. Tarsi approximately equal to the tibia in length. Bill short, robust, high at the base; toothless, but with a prominent festoon; no central tubercle in the broadly oval nostril, nor keel of the palate anteriorly. Superciliary shield prominent. . . . . Wings concavo-convex, the 3rd to 6th quills longest, the 1st very short and more or less bowed inwards, the outer 3 to 5 emarginate or sinuate on the inner webs. Tail quite long, square or rounded [at the end], sometimes emarginate, nearly equalling the wings in length. Tarsi slender, longer than the middle toe without claw, usually extensively if not completely denuded of feathers and scutellate before and behind." Dr. Coues treats of two genera only,

viz. *Astur* and *Accipiter*, and they are those which chiefly concern us. But to them we add, with considerable doubt, the genus *Geranospizias*.

The Accipitrinæ generally feed chiefly on other birds and mammals, which they capture and devour fresh, never feeding on carrion or refuse.

ASTUR.

Astur, Lacépède, Mém. de l'Inst. iii. p. 506 (1801) ; Sharpe, Cat. Birds Brit. Mus. i. p. 92.

The only species of true *Astur* which is found within our area is *A. atricapillus* of North America, a near ally of the Old-World *A. palumbarius*, the two birds occupying between them most of the temperate and subarctic regions of the northern hemisphere. The other members of the genus, which are very numerous, some forty species having been described, are denizens of more tropical countries and abound in the islands of the Eastern Archipelago, New Guinea, &c., several also occurring in tropical Africa.

Astur has of late years been merged with *Accipiter* by American writers ; but, apart from the difference of size, it may be distinguished by the stouter tarsi covered with short scutella, and by the shorter and stouter toes, the length of the middle toes of the two forms being in especially strong contrast.

– 1. **Astur atricapillus.**

Falco atricapillus, Wils. Am. Orn. vi. p. 80, t. 52. f. 3 [1] ; Wagl. Isis, 1831, p. 517 [2].

Astur atricapillus, Bp., Sharpe, Cat. Birds Brit. Mus. i. p. 97 [3] ; Coues, Birds of the N.-West, p. 338 [4].

Accipiter atricapillus, Fisher, Bull. U. S. Dep. Agr. no. 3, p. 43, t. 6 [5].

Astur palumbarius, var. *atricapillus,* Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 237 [6].

Astur palumbarius, var. *striatulus,* Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 240 [7].

Accipiter atricapillus striatulus, Ridgw. Pr. U. S. Nat. Mus. viii. p. 355 [8] ; Bendire, Life Hist. N. Am. Birds, i. p. 199, t. 6. f. 2 [9].

Supra cærulescenti-cinereus, pileo toto nigricante, plumis omnibus ad basin albis ; loris et superciliis albis, nigricante variegatis : subtus griseo-albus, undique griseo transversim irroratus ; rachidibus plumarum omnibus nigris in pectore latioribus ; remigibus nigricantibus, fasciis griseo variegatis ; subalaribus albis, griseo frequenter transfasciatis ; cauda griseo-fusca, fasciis pallidioribus variegatis transfasciata : rostro nigricante, cera et pedibus flavis. Long. tota circa 20·0, alæ 13·5, caudæ 10·0, tarsi 3·0. (Descr. maris ex Sonora, Mexico. Mus. nostr.)

Juv. Supra nigricanti-fuscus, plumis omnibus fulvo limbatis : subtus cervino-albus, plumis omnibus medialiter fuscis ; cauda nigricanti-fusca, apice albicante, fasciis griseis quatuor notata. (Descr. feminæ juv. ex Sierra de Nayarit, Jalisco, Mexico. Mus. nostr.)

Hab. North America generally [6 7].—Mexico (*Wagler* [2]), Yecæra in Sonora (*W. Lloyd*), Sierra de Nayarit, 8000 feet (*W. B. Richardson*).

The American Goshawk has been divided into two races, now called *Accipiter atricapillus* and *A. a. striatulus* [7 8], the latter being the western form. We have examined a fair series of both birds in the British Museum, but fail to appreciate

the differences, and we agree with Dr. Coues[4] that "var. *striatulus*" is untenable. The late J. H. Gurney was of the same opinion.

This Goshawk was long ago stated by Wagler to be found in Mexico[2], but neither Sallé nor his immediate followers nor Sumichrast make any mention of it. Nevertheless it undoubtedly not only occurs in Northern Mexico but breeds there. Our first Mexican specimen was received from Mr. William Lloyd, who shot it in Sonora on April 13th, 1888, a fully adult bird. Subsequently Mr. Richardson secured two young birds in the Sierra de Nayarit, which were not fully feathered and had but lately left their nest. They were shot on June 20th, 1889. In North America *Astur atricapillus* is chiefly known as a northern bird, breeding beyond the limits of the United States and in the higher mountains further south. It feeds chiefly on game-birds and poultry and has a bad character for its raids on poultry-yards[5]. Full accounts of the habits of the species are to be found in Bendire's[9] and other works[5 6 7].

ACCIPITER.

Accipiter, Brisson, Orn. i. p. 310 (1760); Sharpe, Cat. Birds Brit. Mus. i. p. 130.

The range of *Accipiter* coincides approximately with that of *Astur*, but it is more strongly represented in both North and South America than that genus. It may be divided into two sections—one represented by *A. cooperi* and *A. bicolor*, large birds with rounded tails; the other by *A. velox* and *A. chionogaster*, smaller, more slender birds with the tail nearly square at the end.

Of the former two species are found within our limits, and of the latter three.

The slender tarsi and long toes of the American species of *Accipiter* readily distinguish the genus from *Astur*; moreover, the former are covered in front by a single shield instead of by short scutella.

– 1. **Accipiter cooperi.**

Falco cooperii, Bp. Am. Orn. ii. p. 1, t. 10. f. 1[1].

Accipiter cooperi, Scl. P. Z. S. 1859, p. 389[2]; Scl. & Salv. Ibis, 1859, p. 401[3]; Lawr. Ann. Lyc. N. Y. ix. p. 134[4]; Mem. Bost. Soc. N. H. ii. p. 298[5]; Bull. U. S. Nat. Mus. no. 4, p. 41[6]; Dugès, La Nat. i. p. 138[7]; v. Frantz. J. f. Orn. 1869, p. 369[8]; Sharpe, Cat. Birds Brit. Mus. i. p. 137[9]; Sumichrast, La Nat. v. p. 236[10]; Salv. Cat. Strickl. Coll. p. 494[11]; Bendire, Life Hist. N. Am. Birds, i. p. 192[12]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 38, t. 5[13].

Nisus cooperi, Ridgw. Pr. Ac. Phil. 1875, p. 78[14].

Nisus cooperi, var. *cooperi*, Ridgw. in Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 231[15].

Accipiter mexicanus, Swains. Faun.-Bor. Am., Birds, p. 45[16].

Accipiter cooperi mexicanus, Ridgw. Pr. U. S. Nat. Mus. xi. p. 92[17].

Nisus cooperi, var. *mexicanus*, Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 231[18].

Supra schistaceus, capite summo et tectricibus alarum minoribus obscurioribus; genis pallide griseis, fusco striatis: subtus rufus, plumis singulis maculis utrinque tribus albis, rhachidibus nigris; gutture fere albo, striis nigricantibus notato; tectricibus subcaudalibus pure albis; tibiis saturate rufis, albo striatis; alis

subtus fuscis, griseo-albo fasciatis; subalaribus rufis, albo fasciatis; cauda schistacea, nigricanti-quadrifasciata, apice alba: rostro nigricante, cera et pedibus flavis. Long. tota circa 16·0, alæ 9·0, caudæ 8·7, tarsi 2·3. (Descr. maris ex San Miguel Molino, Puebla, Mexico. Mus. nostr.)

♀ mari similis, sed major et paulo obscurior.

♂ *juv.* Supra fuscus, plumis omnibus plus minusve rufo marginatis, scapularibus et tectricibus caudæ superioribus maculis celatis albis notatis: subtus albus, cervino tinctus, plumis omnibus in pectore stria rhachidali fusca latiore.

Hab. North America, temperate regions[15].—Mexico, Hermosillo in Sonora (*Ferrari-Perez*), Mazatlan (*Grayson*[5]), Cañada in Chihuahua (*W. Lloyd*), Guanajuato, Guadalajara (*Dugès*[7]), Sierra de Valparaiso, Sierra de Nayarit (*W. B. Richardson*), Hacienda de San Marcos near Zapotlan (*W. Lloyd*), San Miguel Molino (*Ferrari-Perez*), Omilteme (*Mrs. H. H. Smith*), Orizaba (*Sumichrast*[10]), Oaxaca (*Fenochio*), Totontepec (*Boucard*[2]), Tonala[10], Santa Efigenia[6 10] (*Sumichrast*), Chimalapa (*W. B. Richardson*); Guatemala (*Constancia*[11]), Coban[3], Dueñas (*O. S. & F. D. G.*); Costa Rica (*v. Frantzius*[8], *Carmiol*), El Mojon (*Cooper*[4]).

Cooper's Hawk is a well-known bird in North America as far north as the southern portions of Canada. As its food consists almost exclusively of wild birds and poultry, its depredations are dreaded by the owners of the latter, its boldness being notorious. In Mexico and Central America *Accipiter cooperi* would appear to be less common, though widely distributed in the former country. In Guatemala we only met with birds in immature plumage, and those but rarely. In Costa Rica it appears to be also scarce, and from the intervening country we have no tidings of it.

The Mexican bird was separated by Swainson under the name of *A. mexicanus*, and for some time it was considered to be distinguishable from *A. cooperi*. Latterly this view has been relinquished, and all southern birds now pass under the last-mentioned name.

The only other species of *Accipiter* found in our country at all comparable with *A. cooperi* in size is *A. bicolor*; but the two are readily distinguishable, the former being white beneath with frequent transverse rufous bars, the latter nearly uniform slate-colour. The young of *A. cooperi* is covered on the under surface with dark tear-shaped spots, whilst that of *A. bicolor* is uniform creamy white.

The habits of *A. cooperi* are well described by Capt. Bendire[12] and Dr. Fisher[13].

– 2. **Accipiter bicolor.**

Sparvius bicolor, Vieill. N. Dict. d'Hist. N. x. p. 325[1].

Accipiter bicolor, Scl. & Salv. Ex. Orn. pp. 137, 170, t. 69[2]; P. Z. S. 1870, p. 838[3]; Salv. Ibis, 1869, p. 317[4]; P. Z. S. 1870, p. 215[5]; Sharpe, Cat. Birds Brit. Mus. i. p. 154[6]; Sumichrast, La Nat. v. p. 236[7]; Boucard, P. Z. S. 1883, p. 457[8]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126[9]; Cherrie, Auk, 1892, p. 328[10].

Accipiter sexfasciatus, Swains. An. in Menag. p. 282[11]; Cab. J. f. Orn. 1869, p. 308[12].

Accipiter pileatus, Scl. P. Z. S. 1859, p. 389 (nec Temm.)[13]; Salv. Ibis, 1861, p. 355[14]; Lawr. Ann. Lyc. N. Y. vii. p. 289[15]; ix. p. 134[16]; v. Frantz. J. f. Orn. 1869, p. 369[17].

Supra saturate schistaceus, capite summo nigricante, nuchæ plumis ad basin albis: subtus schistaceus,

pallidior, indistincte albo fasciatus; tectricibus subcaudalibus albis; tibiis saturate rufis; tectricibus subalaribus albis, remigibus fuscis albo punctatis; cauda nigricante, griseo trifasciata: rostro nigricante, cera et pedibus flavis. Long. tota circa 15·5, alæ 8·3, caudæ 6·7, tarsi 2·5. (Descr. maris ex Savana Grande, Guatemala. Mus. nostr.)

♀ mari similis, sed major.

♂ *juv.* Supra fuscus, plumis omnibus rufo marginatis, capite summo nigro, torque cervicali et corpore toto subtus isabellinis; superciliis albis, nigro striatis; auricularibus fuscis, nigro striatis; tibiis pallide rufis; cauda nigricante, albido trifasciata et albo terminata. (Descr. maris juv. ex Choctum, Guatemala. Mus. nostr.)

Hab. MEXICO, Vera Cruz (*fide Cabanis* [12]), Potrero (*Sumichrast* [7]), Jalapa (*de Oca*), Playa Vicente (*Boucard* [13]), Tehuantepec (*Sumichrast* [7]), Merida in Yucatan, Tizimin Yok-Satz [8], Peto (*G. F. Gaumer*); GUATEMALA, Savana Grande, Dueñas, Vera Paz [14], Cubilguitz (*O. S. & F. D. G.*); HONDURAS, Tegucigalpa (*W. B. Richardson*), San Pedro (*G. M. Whitely* [3]); NICARAGUA, San Emilio, Rio Coco, Ojoche, Matagalpa (*W. B. Richardson*); COSTA RICA (*Hoffmann* [12], *v. Frantzius* [17]), Miravalles (*Underwood*), Turrialba (*Arcé*, *Cooper* [16]), San José (*Carmiol* [16], *Zeledon* [9], *Cherrie* [10]), Dota (*Carmiol* [16]); PANAMA, Volcan de Chiriqui, Chitra, Boquete de Chitra, Calovevora (*Arcé* [5]), Line of Railway (*M'Leannan* [15]).—SOUTH AMERICA, northern portion from Colombia to Guiana [2 6].

Accipiter bicolor is a northern form of the Brazilian *A. pileatus*, from which the adult bird differs in having the under wing-coverts white instead of chestnut, while the immature differs in the under surface being plain instead of freely marked with conspicuous spots. From other allied forms, such as *A. chilensis* and *A. guttatus*, the adult can be recognized by its nearly uniform slate-coloured under surface. All these forms, except *A. pileatus*, are figured in 'Exotic Ornithology,' and their distinctive characters shown.

From the northern *A. cooperi*, a bird equalling *A. bicolor* in size, the differences are more pronounced. Rufous enters largely into the colour of the under surface of the adult of the former bird, and the young is freely marked beneath with tear-shaped spots.

Accipiter bicolor is found over a large area in Mexico and Central America, extending from the middle of the State of Vera Cruz over the rest of the tropical and hotter parts of South-eastern Mexico, but, as yet, we have no record of its occurrence in the west. It is found in Yucatan and throughout Eastern Guatemala, and also on the Pacific slope of the mountains up to an elevation of 5000 feet. It passes thence southwards to the Isthmus of Panama, and to the northern parts of South America, being found in Colombia, where Salmon met with it, and Guiana, whence Vieillot's types came and where Whitely secured several specimens.

– 3. **Accipiter velox.**

Falco velox, Wils. Am. Orn. v. p. 116, t. 45. f. 1 [1]; Licht. Preis. Verz. Mex. Vög. p. 3 (*cf.* J. f. Orn. 1863, p. 58) [2].

Accipiter velox, Vigors, Check-list N. Am. Birds, ed. 2, p. 128 [3]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 168 [4]; Herrera, La Nat. (2) i. pp. 176, 320 [5]; Cherrie, Auk, 1892, p. 328 [6];

Allen, Bull. Am. Mus. N. H. v. p. 34[7]; Bendire, Life Hist. N. Am. Birds, i. p. 186, t. 5. ff. 11–17[8]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 32, t. 4[9].

American Brown Hawk, Lath. Gen. Syn. i. p. 98?[10], undè

Falco fuscus, Gm. Syst. Nat. i. p. 280[11].

Accipiter fuscus, Bp., Scl. P. Z. S. 1858, p. 295[12]; 1864, p. 178[13]; Scl. & Salv. Ibis, 1859, p. 218[14]; P. Z. S. 1867, p. 280[15]; Lawr. Ann. Lyc. N. Y. ix. p. 134[16]; Mem. Bost. Soc. N. H. ii. p. 298[17]; Bull. U. S. Nat. Mus. no. 4, p. 41[18]; Dugès, La Nat. i. p. 138[19]; v. Frantz. J. f. Orn. 1869, p. 369[20]; Salv. P. Z. S. 1870, p. 216[21]; Sharpe, Cat. Birds Brit. Mus. i. p. 135[22]; Sumichrast, La Nat. v. p. 236[23]; Boucard, P. Z. S. 1883, p. 457[24].

Accipiter velox rufilatus, Ridgw. Pr. U. S. Nat. Mus. xi. p. 92[25].

Supra schistaceus, capite summo et cervice postica saturatioribus; alis nigricantibus, remigibus indistincte fusco fasciatis: subtus albus, fasciis fuscis, medialiter rufis transfasciatus, plumarum rhachidibus nigris; tibiis albis, rufo-fasciatis; cauda schistacea albo terminata, nigricanti-fusco quadrifasciata; subalaribus albis, fusco maculatis; remigibus subtus fuscis, griseo-albido fasciatis: rostro nigro, cera et pedibus flavis. Long. tota circa 10·0, alæ 6·8, caudæ 5·5, tarsi 1·9. (Descr. maris ex Totontepec, Mexico. Mus. nostr.)

♀ mari similis, sed major et dorso fuscescentiore.

Juv. Supra fuscus, plumis rufo marginatis: subtus albus, rufescenti-fusco striatus, tibiis fasciatis.

Hab. North America generally.—Mexico generally (*Sumichrast*[23], *Deppe*[2], *Ridgway*), Granados Pachico (*Robinette*[7]), Topo Chico (*F. B. Armstrong*), Aristachic, Chihuahua city (*W. Lloyd*), Tampico (*W. B. Richardson*), Cofre de Perote (*M. Trujillo*), Jalapa (*de Oca*), Valley of Mexico (*White*[13], *Herrera*[5], *F. D. G.*), Tlalpam, Ixtapalapa, San Antonio Coapa, Tecali[4] (*Ferrari-Perez*), Mazatlan (*Grayson*[17]), Presidio de Mazatlan (*Forrer*), Plains of Colima, Volcan de Colima, Sierra Nevada de Colima, Bolaños, Zapotlan (*W. B. Richardson*), Guanajuato (*Dugès*[19]), Santana near Guadalajara (*W. Lloyd*), Patzcuaro (*F. D. G.*), La Parada (*Boucard*[12]), Totontepec, Oaxaca (*M. Trujillo*), Sta. Efigenia, Tehuantepec city (*Sumichrast*[18]), Volcan de Tacana, Chiapas (*W. B. Richardson*), Tabi in Yucatan (*F. D. G.*), Merida, Chable[24] (*G. F. Gaumer*); Guatemala, Choctum, Cahabon, Coban, San Gerónimo, Dueñas, Pacific coast[14] (*O. S. & F. D. G.*); Nicaragua, Blewfields (*Wickham*[15]); Costa Rica (*v. Frantzius*), San José (*Carmiol, Cherrie*[6]), El Mojon (*Zeledon*[16]); Panama, Volcan de Chiriqui (*Arcé*[21]), Panama (*Mus. Brit.*).

This is the common Sparrow-Hawk of North America, where it is usually called the Sharp-shinned Hawk, and takes the place of *Accipiter nisus* of Europe. In America it breeds over most, if not all, of the States, as well as in the British Provinces as far as the Arctic circle[9].

In Mexico and Central America it is probably to a large extent a winter visitant, though some may remain to breed, especially in the northern parts. Grayson says that he met with it at all seasons in Western Mexico, but he never was able to find a nest, though convinced that it bred in the district[17]. In other parts of Mexico it is a very common bird, and ranges in altitude from the sea-level to the Valley of Mexico.

In Guatemala it is equally common, and we found it as high as 5000 feet at Dueñas, and at 4300 feet at Coban, as well as in many intermediate localities to the sea-level. In Costa Rica it would appear to be less abundant, but its name is included in Zeledon's lists; and Mr. Cherrie states[6] that there is a specimen in the museum at San José. Arcé sent us specimens from Chiriqui, and there is an example in the British Museum obtained through Boucard from Panama. This is the most southern locality recorded for this Sparrow-Hawk, for in South America it has not yet been detected.

The name by which this species used to be known is *Accipiter fuscus*, the *Falco fuscus* of Gmelin, a title of very doubtful application, and now discarded by American writers in favour of *Accipiter velox* of Wilson, concerning which there can be no uncertainty.

The habits of this bird are fully described by Capt. Bendire[8] and Dr. Fisher[9], the latter author giving a tabular statement of the food of 159 individuals, showing it to consist, to a very large extent, of small birds of nearly fifty ascertained kinds, ranging in size from Warblers to Pigeons and Quails. Mice also are very occasionally consumed.

– 4. **Accipiter chionogaster.**

Nisus chionogaster, Kaup, P. Z. S. 1851, p. 41[1].

Accipiter chionogaster, Scl. & Salv. Ex. Orn. p. 27, t. 14[2]; Sharpe, Cat. Birds Brit. Mus. i. p. 148[3]; Ridgw. Pr. U. S. Nat. Mus. x. p. 583[4].

Accipiter erythrocnemis (nec Gray), Scl. & Salv. Ibis, 1859, p. 218[5]; Salv. Ibis, 1861, p. 140[6].

Accipiter salvini (Ridgway), Salv. & Godm. Ibis, 1892, p. 328[7].

Supra saturate schistaceus, capite summo, cervice postica et dorso antico nigricantibus; scapularibus et tectricibus caudæ superioribus maculis celatis albis notatis: subtus albus, gutturis plumis striis angustis rhachidalibus nigris; tibiis cervino tinctis; subalaribus albis, remigibus nigricantibus griseo-albo transfasciatis; cauda nigricante, griseo trifasciata et albo stricte terminata: rostro nigricante, cera et pedibus flavis. Long. tota circa 11·3, alæ 7·0, caudæ 5·2, tarsi 2·0. (Descr. maris ex San Rafael del Norte, Nicaragua. Mus. nostr.)

♀ mari similis, sed major. Long. tota circa 13·5, alæ 8·0, caudæ 6·4, tarsi 2·2.

Juv. Supra fuscus, plumis stricte fulvo limbatis: subtus hypochondriis medialiter fulvo striatis, tibiis pallide rufescentibus.

Hab. GUATEMALA (*Skinner*[5]), Coban (*Delattre*[1]), Choctum, Lanquin[6], San Gerónimo, Volcan de Fuego (8000 feet), Medio Monte, Savana Grande (*O. S. & F. D. G.*), Sierra de las Minas (*W. B. Richardson*); HONDURAS, Trujillo (*Townsend*[4]); NICARAGUA (*Sallé, in Mus. Brit.*), Matagalpa, San Rafael del Norte, Santa Cruz, Rio Coco (*W. B. Richardson*[7]).

Accipiter chionogaster is a northern representative of the South-American *A. erythrocnemis*, with which it was at one time confused. The latter bird has the feathers of the tibiæ deep rufous and the under surface more or less barred; whereas in the former the tibiæ are pale rusty-red, and the under surface at most, shows narrow dark shaft-stripes, and no trace of cross-bars.

The northern range of this species does not extend beyond Guatemala, where,

however, it is not uncommon on both sides of the mountain-chain, and is also found as high as 8000 feet on the Volcan de Fuego. Mr. Townsend met with it at Trujillo near the coast of Honduras; and Mr. Richardson has sent us a good series of examples from Matagalpa and its neighbourhood. These latter include adult specimens of both sexes, showing that in this state the upper plumage is dark slate-colour, and not dark brown as in the bird figured in 'Exotic Ornithology.'

– 5. **Accipiter tinus.**

Falco tinus, Lath. Ind. Orn. p. 50 [1].

Accipiter tinus, Gray, Gen. Birds, i. p. 29, t. 10 [2]; Salv. P. Z. S. 1867, p. 158 [3]; Sharpe, Cat. Birds Brit. Mus. i. p. 139 [4]; Cherrie, Pr. U. S. Nat. Mus. xiv. p. 537 [5].

Accipiter collaris (nec Kaup), Lawr. Ann. Lyc. N. Y. vii. p. 462 [6].

Supra griseo-fuscus, capite summo obscuriore; alis nigricantibus, fusco indistincte fasciatis: subtus gula alba, pectore, abdomine toto et tectricibus subcaudalibus albis, schistaceo frequenter transfasciatis; subalaribus albis, nigricante maculatis; remigibus subtus fuscis, albo transfasciatis; cauda schistacea, nigro quadrifasciata, rectricibus externis in pogonio externo albo maculatis: rostro nigro, cera et pedibus flavis. (Descr. maris ex Remedios, Colombia. Mus. nostr.)

♀ mari similis, sed major.

Juv. Supra cinnamomeo-rufus, capite summo nigricante: subtus albus, rufo transfasciatus; cauda rufa, fasciis sex nigricantibus notata.

Hab. Nicaragua, Greytown (*Alfaro* [5]); Panama, Santiago de Veraguas (*Arcé* [3]), Line of Railway (*M'Leannan* [6]).—South America generally, to Guiana and Brazil [4].

This, the smallest of South-American Sparrow-Hawks, is widely spread over the southern continent, occurring in Colombia and thence eastwards to Guiana and southwards to Eastern Brazil. In Central America it is apparently much more rare, and it has, so far as we know, only been met with three times, twice in the State of Panama and once in Nicaragua. The only specimen received by us came from Santiago de Veraguas, and is a young bird in its rufous plumage, which it was changing for the ash-colour of the adult when shot. The specimen secured by Don A. Alfaro at Greytown, in Nicaragua, was an adult male [5].

This Hawk is well figured in Gray's 'Genera of Birds,' but hardly anything has been recorded of its habits.

It is an isolated species, so far as its American congeners are concerned, but it has a strong general resemblance in its style of coloration to the African *A. minullus*.

GERANOSPIZIAS.

Ischnosceles, Strickland (nec Burmeister), Ann. & Mag. N. H. 1844, xiii. p. 400.

Geranospiza, Kaup, Isis, 1847, p. 183; Ridgw. Pr. Bost. Soc. N. H. xiv. p. 276.

Geranospizias (nom. emend.), Sundevall, Av. Tent. p. 107; Sharpe, Cat. Birds Brit. Mus. i. p. 80.

A peculiar genus of uncertain affinities, but restricted to the Neotropical region, the

three species or races which it contains spreading over nearly the whole of the warmer portions of the region.

In Mexico and Central America we find a fairly well-marked race distinguished by the blackness of its plumage from either of the others of the South-American continent. It represents the genus in the north as far as Mazatlan in Western, and Cordova in Eastern Mexico.

Regarding the affinities of this genus, Mr. Ridgway has recorded that the tibio-tarsal joint is flexible both forwards and backwards, as in the African genus *Polyboroides*, and on this and other grounds considers that the two forms are allied—a view held by Gurney both prior to Mr. Ridgway's observations and subsequently.

The position of these genera must remain uncertain until such time as more complete dissections have been made and comparisons instituted. In the meantime, though we leave *Geranospizias* in the Accipitrinæ, we do so with a conviction that it will be ultimately removed elsewhere, as neither its structure, so far as we know it, or habits are in conformity with the true Accipitrinæ.

The genus is described by Mr. Ridgway as follows:—"Form very slender, the wings and tail very long, the head small, bill weak, and tarsi extremely long and slender. Outer toe very much shorter and weaker than the inner, and about equal in length to the posterior, its claw disproportionately small and weak. Tibio-tarsal joint flexible both backwards and forwards. Secondaries much developed, reaching nearly to the end of the primaries, and very broad. Bill much as in *Nisus* [i. e. *Accipiter*]; nostril obliquely horizontal, oval. Tarsus about two and a half times as long as the middle toe, with frontal and posterior series of broad transverse scutellæ, these being often fused into continuous plates; claws normal. Tibial feathers short and close, not plume-like. Wing long, but the primaries not much longer than the secondaries, the fourth to the sixth quills longest, the first the shortest and much bowed; outer six with inner webs sinuated. Tail long, nearly equal to the wing, rounded, the feathers very broad." (Ridgway, Pr. Bost. Soc. N. H. xiv. p. 276.)

We have no means of ascertaining the relative positions of the ends of the coracoid, scapular, and clavicle in this genus, which should have a determining influence in fixing the position of *Geranospizias*.

1. Geranospizias niger.

Ischnosceles niger, Du Bus, Bull. Ac. Brux. xiv. p. 102[1]; Esq. Orn. t. 16[2]; Salv. P. Z. S. 1870, p. 216[3].

Geranospiza nigra, Scl. & Salv. P. Z. S. 1870, p. 838[4]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 39[5].

Geranospizias niger, Sharpe, Cat. Birds Brit. Mus. i. p. 82[6]; Sumichrast, La Nat. v. p. 235[7]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127[8]; Salv. Ibis, 1889, p. 375[9]; 1890, p. 89[10].

Geranospiza gracilis, Scl. P. Z. S. 1856, p. 285[11].

Geranospiza gracilis, var. *niger*, Lawr. Mem. Bost. Soc. N. H. ii. p. 299 [12].

Geranospiza cærulescens, Scl. & Salv. Ibis, 1859, p. 218 [13]; 1860, p. 44 [14]; Lawr. Ann. Lyc. N. Y. vii. p. 289 [15]; Stone, Pr. Ac. Phil. 1890, p. 204 [16].

Geranospiza cærulescens, var. *niger*, Ridgw. Pr. Bost. Soc. N. H. xvi. p. 85 [17].

Schistaceo-niger, plumis cervicis posticæ ad basin albis: subtus concolor, mento albo variegato, plumis abdominis tibiarum et tectricum caudæ superiorum albido stricte marginatis; subalaribus nigris, albo variegatis; remigibus subtus fasciis duabus irregularibus albidis notatis; cauda nigra, albido terminata et fasciis duabus albis notata: rostro nigro, pedibus rubidis. Long. tota circa 19·5, alæ 12·3, caudæ 9·5, tarsi 3·3. (Descr. feminæ ex Escuintla, Guatemala. Mus. nostr.)

Juv. Loris et fronte albo intermixtis, corpore toto subtus nigricante cervino-albido transfasciato, subcaudalibus fere omnino cervino-albidis.

Hab. Mexico, both coasts (*Sumichrast* [7]), Mazatlan (*Grayson* [12]), Presidio de Mazatlan (*Forrer*), Tecolapa in Colima (*W. Lloyd*), Cordova (*Sallé* [11]), Santa Efigenia [5], Cacoprieto, Tonala (*Sumichrast*), Buctzotz and Peto in Yucatan, Meco I. [9 10] (*G. F. Gaumer*), Shkolak (*Stone & Baker* [16]); British Honduras, Orange Walk (*G. F. Gaumer*); Guatemala [13], Dueñas [14] (*O. S.*), Savana Grande, Escuintla (*O. S. & F. D. G.*); Honduras, San Pedro (*G. M. Whitely* [4]); Nicaragua, Chinandega, Ocotal (*W. B. Richardson*); Costa Rica, Pozo Azul de Pirris (*Zeledon* [8]); Panama, Mina de Chorcha (*Arcé* [3]), Lion Hill (*M'Leannan* [15]).

This singular bird was first described [1] by Du Bus from a Mexican specimen, and was subsequently figured in his 'Esquisse Ornithologique' [2]. It has since been found to occur over a large part of the hotter regions of our country, from Mazatlan on the west coast of Mexico, and the State of Vera Cruz on the east, to Panama. Grayson [12] speaks of it as one of the rarest of the Falconidæ in Western Mexico. He only secured two specimens during his residence at Mazatlan. These were found near ponds in the low ground near the Rio Mazatlan. One, shot in February, had just captured a large frog; the other was obtained in April near the same place. In the stomach of each he found the partly digested remains of frogs, and in one a small water-snake. He describes the bird as having a sluggish nature, sitting listlessly for hours on the same branch of a tree. Mr. Stone secured a specimen near the "aguada" of Shkolak, in Yucatan. A specimen shot by Salvin near Dueñas was in the forest of low trees which then skirted the hills to the eastward of the plain of Dueñas. It was not near water, though both the Rio Guacalate and the Lake of Dueñas were not far off. The stomach of this bird contained a small mammal. The iris was burnt-sienna colour, the outer portion of the ring being lighter coloured than the inner, the legs blood-orange, and the cere black. Dueñas (4900 feet) is above the usual range of *G. niger*, but other specimens subsequently obtained by us were from the lower elevations of Savana Grande and Escuintla (1200 feet). All these places are on the slope of the mountains trending towards the Pacific Ocean. We have no record of the species being found on the Atlantic side of the Cordillera in Guatemala, though it doubtless occurs there,

having been recorded both from British Honduras as well as from the Republic of that name [4].

Mr. Ridgway [17] states that M'Leannan's specimens from Panama named *G. cærulescens* by Lawrence [15] are exactly intermediate in colour between that form from Brazil and *G. niger* from Mexico. Our birds from the State of Panama, a little further to the westward [3], agree with the northern ones.

ARCHIBUTEO.

Archibuteo, Brehm, Isis, 1828, p. 1269; Sharpe, Cat. Birds Brit. Mus. i. p. 195.

A genus of the Northern Hemisphere, two species being found in North America—one of them, *Archibuteo ferrugineus*, occurring in Northern Mexico. In size and general features the resemblance between *Archibuteo* and *Buteo* is very great, but the former genus may at once be distinguished by having the front and sides of the tarsi feathered, while in the species of the latter genus the feet are bare. The wings are long and pointed, the fourth quill being the longest and the first to the fourth emarginate on the inner web; the tail is nearly even; the toes short, the claws small but stout. The nostrils are irregularly oval, with no visible central tubercle; they are slightly covered by upcurving loral bristles; the tomia of the maxilla has no notch and is but slightly festooned. A more pronounced difference between the genera *Buteo* and *Archibuteo* consists in the transversely-plated hinder aspect of the tarsus in the former genus, instead of the reticulated and more Aquiline character of the scales in *Archibuteo*. This feature, however, is not at once apparent, owing to the feathered covering of the tarsus in the latter genus.

1. Archibuteo ferrugineus.

Falco ferrugineus, Licht. Abh. k. Ak. Berl. 1838, p. 428 [1].

Archibuteo ferrugineus, Gray, Gen. Birds, p. 12 [2]; Cassin, Birds Cal. & Texas, pp. 104, 159, t. 26 [3]; Ridgw. in Baird, Brewer, & Ridgw. N. Am. Birds, iii. p. 300 [4]; Sharpe, Cat. Birds Brit. Mus. i. p. 199 [5]; Bendire, Life Hist. N. Am. Birds, p. 259, t. 9. ff. 1, 2, 4 [6]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 135 [7].

Supra ferrugineus, plumis omnibus medialiter fuscis ad basin albis; alis griseo-fuscis, secundariis albido terminatis et indistincte fusco fasciatis, subtus fere albis: subtus albus, plumarum rhachidibus strictissime fuscis, hypochondriis fusco sparsim maculatis; tibiis et tarsis plumosis ferrugineis, fusco crebre transfasciatis; cauda supra ferrugineo lavata ad basin griseo irrorata, subtus pure alba: cera et digitis flavis. Long. tota circa 23·0, alæ 17·5, caudæ 9·3, tarsi 3·4. (Descr. exempl. ex Mexico. Mus. Brit.)

Juv. Supra fere omnino fuscus, colore ferrugineo absente; tibiis et tarsis albidis, fusco maculatis.

Hab. Western North America, from the Plains (Eastern North Dakota to Texas) westward to the Pacific, and from the Saskatchewan region south into Mexico [7].—N. Mexico, Real del Monte (*Mus. Brit.* [5]).

We have not received any skins of this species from our collectors in Mexico,

but it is apparently not uncommon in winter in Texas, on the north side of the Rio Grande. That it occurs in Northern and Central Mexico can hardly be doubted; but our evidence that it does so rests partly on three specimens in the British Museum which have been in the collection for many years, and partly on the statement of Mr. Ridgway that the bird occurs in Mexico, though we have no precise information on the subject. Capt. Bendire[6], however, speaks of it as "wintering abundantly in Western Texas, many passing south into Mexico."

The species breeds from the Plains of the Saskatchewan south to Utah, Colorado, and Kansas. It is a fine and handsome bird, building a large nest of sticks, lined with turf, in a tree or, in sparsely-wooded districts, on the ground. In some instances, where sticks are difficult to procure, the bird has been known to utilize the bones from a buffalo's skeleton for the construction of its nest. The eggs are three or four in number, and are somewhat richly mottled with rufous markings.

BUTEO.

Buteo, Cuvier, Leç. Anat. Comp. i. tab. (1800), et auctt.; Sharpe, Cat. Birds Brit. Mus. i. p. 164.
Tachytriorchis, Kaup, Classif. Säug. u. Vög. p. 123; Sharpe, Cat. Birds Brit. Mus. i. p. 161.
Buteola, Bonaparte, Compt. Rend. xli. p. 651; Sharpe, Cat. Birds Brit. Mus. i. p. 201.
Antenor, Ridgway (nec Montf.) in Baird, Brewer, & Ridgw. Hist. N. Amer. Birds, iii. p. 248.
Parabuteo, Ridgway, t. c. p. 248, note.
Erythrocnema, Sharpe, Cat. Birds Brit. Mus. i. p. 84.

The genus *Buteo* extends throughout a large portion of the world, some thirty species being distributed over Europe, Asia, Africa, and Madagascar, as well as North and South America. Some dozen species occur within our limits, of which *B. albicaudatus*, *B. zonocercus*, *B. brachyurus*, and *B. albifrons* belong to South-American rather than to Northern forms, the others being of Northern type and visiting Mexico and Central America only in the winter season.

Dr. Sharpe divides the genus *Buteo*, as here understood, into four genera, viz. *Erythrocnema*, *Tachytriorchis*, *Buteo*, and *Buteola*. *Tachytriorchis* has a rather shorter tail than the others, but does not materially differ; *Buteola*, in his arrangement, is placed in the same section as *Archibuteo*, and is said to differ from true *Buteo* by the presence of a tubercle in the nasal opening. We have failed to find this character, the nostrils of *Buteola* being just like those of *Buteo*. Lastly, *Buteo harrisi*, which Dr. Sharpe places in his subfamily Accipitrinæ, is considered by Dr. Coues a subgenus of *Buteo*, which we think its more appropriate place.

Dr. Coues's divisions of the genus seem fairly natural, and are based mainly on the number of primaries which are emarginate on the inner webs. They are as follows:—

A. Five outer primaries emarginate; tail more than two-thirds the wing; bill high at the base; nostrils oval, with eccentric tubercle *. (*Parabuteo.*)

B. Four outer primaries emarginate.
Tail about one-third the wing. (*Tachytriorchis.*)
Tail about half the wing. (*Buteo.*)

C. Three outer primaries emarginate. (*Buteo* partim, *Buteola.*)

The wings in *Buteo* are long and pointed, the third and fourth quills the longest. The bare tarsi are scutellate in front and behind, reticulate on the sides; the toes relatively much longer than in *Archibuteo* and with long strong claws. The bill has no notch and the tomia is but slightly festooned; the nostrils are irregularly oval and (except, perhaps, in *Buteo harrisi*) without central tubercle.

Section A. *Majores. Alæ remigibus externis quinque in pogonio interno excisis.*

1. Buteo harrisi.

Falco harrisii, Audub. Birds Amer. t. 392 [1]; Orn. Biogr. v. p. 30 [2].
Craxirex harrisii, Coues, Proc. Acad. Phil. 1866, p. 49 [3].
Antenor harrisii, Gurney, Ibis, 1875, p. 234 [4].
Hypomorphnus unicinctus (nec Temm.), Cab. & Tschudi, Faun. Peruan. pp. 17, 85 [5].
Polyborus tæniurus, Tschudi, Arch. f. Naturg. 1844, p. 263 [6].
Urubitinga unicincta (nec Temm.), Scl. & Salv. Ibis, 1859, p. 216 [7]; Dugès, La Nat. i. p. 138 [8].
Spizageranus unicinctus (nec Temm.), Scl. P. Z. S. 1860, p. 288 [9].
Craxirex unicinctus (nec Temm.), Salvin, P. Z. S. 1867, p. 158 [10].
Morphnus unicinctus, Finsch, Abh. nat. Ver. Bremen, 1873, p. 363 [11].
Erythrocnema unicincta, pt. (nec Temm.), Sharpe, Cat. Birds Brit. Mus. i. p. 85 [12]; Sumichr. La Nat. v. p. 235 [13].
Antenor unicinctus (nec Temm.), Berl. Ibis, 1884, p. 436 [14].
Parabuteo unicinctus, var. *harrisi,* Ridgw. in Baird, Brew., & Ridgw. N. Amer. Birds, iii. p. 250 [15].
Craxirex unicinctus, var. *harrisi,* Lawr. Mem. Bost. Soc. N. H. ii. p. 302 [16].
Antenor unicinctus, var. *harrisi,* Lawr. Bull. U. S. Nat. Mus. no. 4, p. 42 [17].
Buteo unicinctus harrisi, Sennett, Bull. U. S. Geol. Surv. v. p. 419 [18].
Parabuteo unicinctus harrisi, Nutting, Proc. U. S. Nat. Mus. v. p. 404 [19]; Belding, op. cit. vi. p. 343 [20]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [21]; Bendire, Life Hist. N. Am. Birds, i. p. 20, t. 6. figs. 3, 4 [22]; Cherrie, Auk, ix. p. 328 [23]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 47 [24]; A. O. U. Check-list N. Amer. Birds, p. 129 [25].

Supra fumoso-brunneus, dorso postico sordide ferrugineo, nigro maculato; supracaudalibus et caudæ parte basali albis; rectricibus nigricantibus, late albo terminatis; alis nigricanti-brunneis, tectricibus alarum minimis castaneis, medianis brunneis, castaneo marginatis: subtus omnino brunneus, concolor; tibiis læte castaneis; crisso et subcaudalibus pure albis; subalaribus castaneis, nigro medialiter notatis: rostro plumbeo, ad apicem nigro; cera et pedibus flavis; iride brunnea. Long. tota circa 22·5, alæ 14·0, caudæ 9·45, tarsi 3·7. (Descr. feminæ ex Rio Grande city, Texas. Mus. nostr.)

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* This latter character cannot always be detected in skins.

♂ feminæ similis, sed minor. Long. tot. circa 19·0, alæ 13·5, caudæ 9·0, tarsi 3·5. (Descr. ex spec. ex Zacatecas. Mus. nostr.)

Juv. Brunneus, ochraceo lavatus; supracaudalibus albis; cauda brunnea, anguste albo terminata, et fasciis fere viginti nigricantibus: subtus ochrascens, maculis magnis saturate brunneis ornatis; tibiis fulvis, rufo tinctis, et anguste nigro transfasciatis. (Descr. fem. juv. ex Tambo Valley, S. Peru. Mus. nostr.)

Hab. NORTH AMERICA, Louisiana, Texas, Southern New Mexico, Southern Arizona, Lower California [25].—MEXICO, Rio Salado, Nuevo Leon (*F. B. Armstrong*), Guaymas, Sonora (*L. Belding* [19]), Choix, Sinaloa (*W. Lloyd*), Mazatlan (*Grayson* [16], *Kegel* [11]), Presidio de Mazatlan (*A. Forrer*), Zacatecas (*W. B. Richardson*), Santana near Guadalajara (*W. Lloyd*), Tepic, Jalisco (*Grayson* [16]), Colima (*Xantus* [16]), Guanajuato (*Dugès* [8]), Tehuantepec (*Sumichrast* [13], *W. B. Richardson*), Tapanatepec (*Sumichrast* [13]), Oaxaca (*Sumichrast* [13]); GUATEMALA (*G. U. Skinner* [7]); NICARAGUA, San Rafael del Norte (*W. B. Richardson*); COSTA RICA, La Palma, Gulf of Nicoya (*C. C. Nutting* [19]), San José (*Zeledon* [21], *Cherrie* [23]); PANAMA [25], Santa Fé de Veraguas (*E. Arcé* [10]).—VENEZUELA [14]; ECUADOR [9]; PERU [5]; CHILE [12].

This species is very common and breeds abundantly in some of the Southern United States, especially in Texas, and in Lower California. It probably breeds in Mexico also; but of this we have no confirmation, as nearly all our specimens have been procured in spring or autumn. We have examined immature birds from Ecuador, Venezuela, Peru, and Chile, but have no direct evidence of their breeding in these countries.

Possibly *B. harrisi* is only a partial migrant to South America, and this would account for its apparent rarity in many parts of Central America. We did not meet with it in Guatemala, though Skinner obtained a specimen in that country. Only a few examples have been procured in Nicaragua, Costa Rica, and Panama, and those we received from Mr. Richardson and others from Mexico were all obtained between August and March. In South America, from Eastern Brazil to Argentina, and as far inland as Salta, its typical ally (*B. unicinctus*) differs but little; it is somewhat blacker and never entirely loses the mottled appearance of the under surface, while the rufous thighs of the southern bird are always cross-barred. In *B. harrisi* the plumage is perfectly uniform in colour both above and below, and the thighs are chestnut without any blackish cross-bars.

In habits the species is frequently described as sluggish. According to Mr. Sennett its food consists of mice, lizards, birds, &c.[18]

In Costa Rica Mr. Nutting [19] says that it is an inveterate poultry thief, associating with the Turkey-Vultures and eating offal.

The nest is either placed in low bushes or in trees at a height of forty or fifty feet from the ground.

The eggs are two or three in number, white or sparsely marked with rufous.

no. CLIX.

Section B. *Majores. Alæ remigibus externis tribus in pogonio interno excisis; cauda brevis; alæ longissimæ.*

2. Buteo albicaudatus.

Aguila coliblanca, Azara, Apunt. i. p. 69 [1].

Buteo albicaudatus, Vieill. N. Dict. d'Hist. N. iv. p. 477 [2]; Salv. P. Z. S. 1870, p. 215 [3]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 167 [4]; Bendire, Life Hist. N. Amer. Birds, p. 234, t. 7. figs. 8, 9 [5]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 72 [6].

Tachytriorchis albicaudatus, Sharpe, Cat. Birds Brit. Mus. i. p. 162 [7]; Sumichrast, La Nat. v. p. 236 [8].

Buteo albicaudatus sennetti, Allen, Bull. Am. Mus. N. H. v. p. 144 [9].

Tachytriorchis sennetti, Sharpe, Hand-list Birds, i. p. 255 [10].

Falco pterocles, Temm. Pl. Col. tt. 56, 139 [11].

Buteo pterocles, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 41 [12].

Tachytriorchis pterocles, Cab. J. f. Orn. 1869, p. 210 [13].

Buteo erythronotus, Scl. P. Z. S. 1857, p. 211 [14] (nec King); 1859, pp. 368 [15], 389 [16]; Scl. & Salv. Ibis, 1860, p. 401 [17]; Lawr. Ann. Lyc. N. Y. ix. pp. 133 [18], 207 [19]; v. Frantz. J. f. Orn. 1869, p. 368 [20].

Buteo albonotatus, Scl. & Salv. Ibis, 1859, p. 217 [21] (nec Kaup).

Supra plumbeus, capite summo et cervicis lateribus grisescentioribus; loris albis; dorso postico et tectricibus supracaudalibus pure albis; humeris ferruginosis et scapularibus ferrugineo intermixtis: subtus pure albus, gula vix plumbeo striata; hypochondriis fasciis paucis tenuibus notatis; alis apicibus plumbeo-nigris, medialiter pallidioribus, leviter griseo fasciatis; subalaribus albis; axillaribus albis, plumbeo transfasciatis; cauda alba, supra griseo tincta et fasciis angustis griseis transnotata, fascia lata subapicali nigra; cera et pedibus flavis. Long. tota circa 19·0, alæ 16·6, caudæ 7·0, tarsi 3·5. (Descr. exempl. ex San Gerónimo, Guatemala. Mus. nostr.)

Forma altera, vix junior, gula tota plumbea.

Juv. Supra nigricanti-fuscus, humeris vix ferrugineo marginatis; dorso postico albo, plumis omnibus fascia lata subterminali fusca notatis; cauda supra grisea haud fasciata, ad apicem obscuriore: subtus nigricanti-fuscus, plumis omnibus ad basin albis et fulvo marginatis; tibiis et tectricibus subcaudalibus cervinis fusco maculatis.

Hab. North America, Lower Rio Grande Valley, Texas [5 6 9].—Mexico, Zacatecas (*W. B. Richardson*), Jalapa (*de Oca* [15], *Ferrari-Perez* [4]), Mirador (*Sumichrast* [8]), Orizaba (*Botteri* [14]), Talea (*Boucard* [16]), Puebla, Oaxaca, Tehuantepec, Tapana, Tonala, Cacoprieto (*Sumichrast* [8 12]), Merida in Yucatan (*Schott* [19]); Guatemala, Antigua (*Constancia* [17]), Dueñas (*O. S. & F. D. G.*), El Baoul (*O. S.*), San Gerónimo (*R. Owen*); Costa Rica (*v. Frantzius* [13 20]), San José (*Carmiol* [18]), San Antonio (*Zeledon* [18]); Panama, Calovevora, Chitra (*Arcé* [3]).—South America generally on the eastern side of the Andes from Colombia and Guiana to Argentina.

This Buzzard is easily recognized by its white under surface and long wings, the latter extending beyond the tip of the tail, the three outer primaries only are excised *. The rectrices are crossed by numerous bands of dusky brown, thirteen in number.

* Dr. Coues says that *four* primaries are excised, but we do not find this to be the case.

B. albicaudatus exhibits many changes of plumage, all apparently due to age. The adult is grey above and pure white beneath up to the base of the bill, but examples having the upper portion of the throat grey are not uncommon. Mingled with these are slightly younger birds which still have the dark throat and the whole belly, flanks, and tibiæ banded with narrow dusky bars; this phase is preceded by a plumage in which the under surface is pale fawn-colour, with large subterminal spots on each feather. The tail is shorter than in any other species of *Buteo* found in Central America; it varies from an ashy grey with two cross-bars, to white with a broad subterminal bar and a few narrow transverse bands on the basal portion. All these stages of plumage are represented in our series from the Lower Rio Grande and various parts of Mexico, Central and South America. Professor Allen has separated the Rio Grande bird as *Buteo albicaudatus sennetti*, a race of the true *B. albicaudatus* of South Brazil, but, with the series before us, we find no distinctive characters for definition. A set of skins from British Guiana are matched, so far as we can see, by a similar set from the north, the birds in both districts undergoing the same changes of plumage.

Buteo albicaudatus is a resident in Southern Texas and the valley of the lower Rio Grande, and breeds abundantly in this portion of the Gulf States of North America [5]. Though not yet recorded from the valley of Mexico itself, it is, according to Sumichrast [8], widely distributed in that country. In Guatemala we found it on the southern slope of the cordillera, but there, as in Costa Rica, it is rare. Arcé sent us specimens from Calovevora and Chitra in the State of Panama, thence its range extends to Colombia, Venezuela, and Guiana, through Central and Eastern Brazil to Argentina and Paraguay.

Shy and wary in habit, it breeds abundantly in Texas, the nest being placed in low bushes. The eggs, which are white with a few small blotches of light brown or drab [5], are generally two, rarely three, in number. We found *B. albicaudatus* feeding on beetles and locusts in Guatemala [21], but it is also said to eat snakes, frogs, rabbits, and quails [6].

Section C. *Majores. Alæ remigibus externis quatuor in pogonio interno excisis.*

3. Buteo abbreviatus.

Buteo albonotatus, Gray, List Accip. p. 17 (1844) (descr. nulla) [1]; Scl. P. Z. S. 1860, p. 253 [2]; v. Frantz. J. f. Orn. 1869, p. 368 [3]; Salv. Ibis, 1873, p. 428 [4]; Lawr. Mem. Bost. Soc. N. H. ii. p. 302 [5].

Buteo abbreviatus, Cab. in Schomb. Guiana, iii. p. 739 [6]; Salv. Cat. Strickl. Coll. p. 486 [7]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 167 [8]; Herrera, La Nat. (2) i. pp. 176, 320 [9]; Bendire, Life Hist. N. Amer. Birds, p. 228, t. 7. fig. 6 [10]; A. O. U. Check-l. N. Amer. Birds, p. 132 [11]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 71 [12].

Tachytriorchis abbreviatus, Sharpe, Cat. Birds Brit. Mus. i. p. 163 [13].

Buteo zonocercus, Scl. P. Z. S. 1858, p. 130 [14]; Trans. Z. S. iv. p. 263, t. 59 [15]; Scl. & Salv. Ibis, 1859, p. 217 [16]; Coues, Pr. Ac. Phil. 1866, p. 46 [17]; Elliot, Birds N. Am. ii. t. 33 [18].

Buteo fuliginosus (nec Sclater), Lawr. Ann. Lyc. N. Y. ix. p. 133 [19]; v. Frantz. J. f. Orn. 1869, p. 368 [20].

Niger, supra plumis omnibus ad basin albis; fronte alba: subtus maculis celatis albis notatus; alis fusco-nigris, indistincte nigro transfasciatis, subtus griseo-albidis fusco fasciatis et variegatis; remigum apicibus nigris; cauda supra nigra, fasciis duabus medianis fuscis notata, his subtus albis, interdum irregulariter confluentibus; cera et pedibus flavis; iride coryllina. Long. tota circa 20·0, alæ 15·5, caudæ 8·0, tarsi 2·8. (Descr. maris ex Hermosillo, Mexico. Mus. nostr.)

Juv. ad. Similis, sed cauda nigra supra crebre fusco fasciata, fasciis his subtus in pogonio rectricum interno albidis.

Hab. Southern United States, Texas, New Mexico, Arizona, Southern California [11], Lower California [10].—Mexico [1], Hermosillo in Sonora (*Ferrari-Perez*), Mazatlan (*Grayson* [5], *Forrer*), Valley of Mexico (*Herrera* [9]), Sierra de Valparaiso, Zacatecas (*W. B. Richardson*), Chietla, Puebla (*Ferrari-Perez* [8]), Vera Cruz (*Sallé* [2]); Guatemala [4 7 14 16] (*Mus. Cantabr.*); Costa Rica (*v. Frantzius* [3]), San Lucas (*C. F. Underwood*), La Palma [19], San Antonio [20] (*Zeledon*).—British Guiana; Peru.

The Zone-tailed Buzzard is a summer visitor to the Southern United States, where it nests in Central and South-western Texas, as well as in Southern New Mexico and Central and Southern Arizona, probably also in Southern California. In Lower California the bird has been found nesting, near Cape San Lucas [10].

We have a male of this species from Mr. Ferrari-Perez, obtained at Hermosillo in Sonora, in January. Mr. A. Forrer met with it at Presidio de Mazatlan, in the same month, where Grayson says that it is a resident, though not common. An example procured by Mr. Richardson in the Sierra de Valparaiso in Zacatecas on the 27th of July indicates that it also breeds in the mountains of this Province.

We did not meet with this Buzzard in Guatemala, except as a moth-eaten specimen in the Museum of the Sociedad Economica, at Escuintla, in June 1873 [4]; but Skinner obtained an example in that country, and another procured by Constancia is in the Strickland Collection at Cambridge [7]. Von Frantzius includes it in his list of Costa Rican birds, and Mr. C. F. Underwood informs us that there is a specimen from San Lucas in the National Museum at San José.

This species was originally described from British Guiana, and a young bird in the British Museum, from Lima in Peru, also appears to belong to it.

The late Colonel Grayson says that its flight is easy and graceful, the bird frequently soaring to a great height. From its mode of flight and gyrations, as well as in colour, it resembled at a distance a Turkey-Vulture [5]. The food is said to consist of lizards, frogs, and fishes, as well as small Rodents.

The nest is large and bulky, composed of sticks and lined with a few leaves. The eggs are white or bluish white, and seldom show any reddish-brown spots or blotches [10].

4. Buteo borealis.

American Buzzard, Lath. Gen. Syn. i. pt. 1, p. 50 [1].

Red-tailed Falcon, Penn. Arctic Zool. p. 205 [2].

Leverian Falcon, Penn. Arctic Zool. p. 206 [3].

Falco borealis, Gm. Syst. Nat. i. p. 266 [4]; Wagler, Isis, 1831, p. 517 [5].

Buteo borealis, Vieill. N. Dict. d'Hist. Nat. iv. p. 478 [6]; Gosse, Birds of Jamaica, p. 11, t. 2 [7]; Scl. & Salv. Ibis, 1859, p. 217 [8]; Scl. P. Z. S. 1859, pp. 368 [9], 389 [10]; Scl. & Salv. P. Z. S. 1864, p. 369 [11]; Dugès, La Nat. i. p. 138 [12]; Salvin, P. Z. S. 1870, p. 215 [13]; Sharpe, Cat. B. Brit. Mus. i. p. 188 [14]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 41 [15]; Sumichr. La Nat. v. p. 236 [16]; Herrera, La Nat. (2) i. pp. 176, 320 [17]; Bendire, Life Hist. N. Amer. Birds, p. 206, t. 6. figs. 5, 6 [18]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 48, pl. 7 [19].

Buteo borealis, var. *borealis*, Ridgw. in Baird, Brew., & Ridgw. N. Amer. Birds, iii. p. 282 [20].

Buteo harlani (nec Audub.), Scl. & Salv. Ibis, 1859, p. 217 [21].

Buteo calurus, Cass. in Baird, Cass., & Lawr. Birds N. Amer. p. 22, t. 14 [22]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 167 [23]; Dugès, La Nat. i. p. 138 [24].

Buteo borealis, var. *calurus*, Ridgw. in Baird, Brew., & Ridgw. N. Amer. Birds, iii. p. 286 [25]; Lawr. Mem. Bost. Soc. N. H. ii. p. 301 [26].

Buteo borealis calurus, Belding, Pr. U. S. Nat. Mus. vi. p. 344 [27]; Ferrari-Perez, op. cit. ix. p. 167 [28]; Allen, Bull. Amer. Mus. N. H. v. p. 34 [29]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 787 [30].

Buteo montanus (nec Nutt.), Cab. J. f. Orn. 1869, p. 210 [31]; Sharpe, Cat. Birds Brit. Mus. i. p. 189 [32].

Buteo borealis, var. *montanus*, Lawr. Ann. Lyc. N. Y. ix. pp. 133 [33], 207 [34]; Frantz. J. f. Orn. 1869, p. 368 [35]; Sumichr. La Nat. v. p. 236 [36].

Buteo lucasanus, Ridgw. in Coues, Key N. Amer. Birds, p. 216 [37].

Buteo borealis lucasanus, Ridgw. in Baird, Brew., & Ridgw. Hist. N. Amer. Birds, iii. p. 285 [38].

Buteo borealis, var. *krideri*, Hoopes, Ridgw. in Baird, Brew., & Ridgw. Hist. N. Amer. Birds, iii. p. 284 [39].

Buteo borealis kriderii, Ridgw. Man. N. Amer. Birds, p. 232 [40].

Buteo krideri, Gurney, List Diurn. Birds of Prey, p. 66 [41].

Buteo borealis, var. *costaricensis*, Ridgw. in Baird, Brew., & Ridgw. Hist. N. Amer. Birds, iii. p. 285 [42].

Buteo costaricensis, Gurney, Ibis, 1876, p. 239 [43].

Buteo borealis costaricensis, Nutting, Proc. U. S. Nat. Mus. v. p. 404 [44]; vi. p. 377 [45]; Zeledon, An. Mus. Nac. Costa Rica, i. p. 126 [46].

Buteo cooperi (nec Baird), Herrera, La Nat. (2) i. pp. 176, 320 [47].

Supra saturate fuscus, plumis nuchæ ad basin albis; tectricibus supracaudalibus mediis dorso concoloribus, lateralibus rufis; loris albis: subtus albus, gula fusco striata, pectoris lateribus et hypochondriis maculis guttiformibus notatis; tibiis pallide rufis vix transfasciatis; alis subtus griseo-albidis, vix fusco irroratis; remigibus ad apicem nigricantibus; cauda castanea, fascia subterminali nigra; pedibus flavis. Long. tota circa 19·0, alæ 14·5, caudæ 8·0, tarsi 3·3. (Descr. exempl. ex Guatemala. Mus. Brit.)

Forma altera. Subtus rufescens, gutture et abdomine medio fuscis, tibiis fusco fasciatis (*B. calurus*).

Forma tertia. Pallidior, supra albo variegata; cauda pallidiore castanea, fascia subterminali nigra, sæpius absente: subtus fere omnino alba, tibiis vix cervino tinctis, abdomine medio striis rhachidalibus vix ullis (*B. krideri*).

Juv. Subtus albus, gula (leviter), pectoris lateribus et abdomine medio fusco striatis; cauda rufescenti-fusca, frequenter fusco transfasciata.

Hab. North America generally [20 25 42].—Mexico [5], Cuihuichupa in Sonora (*Robinette* [29]), Hermosillo (*Ferrari-Perez*), Guaymas (*Belding* [27]), Mazatlan (*Grayson* [26]), Ciudad in Durango (*Forrer*), Zacatecas, Bolaños, Zapotlan, Sierra Madre de Nayarit, Volcan de Colima, Plains of Colima and San Luis Potosi (*W. B. Richardson*), Hacienda de San Marcos, Jalisco (*W. Lloyd*), Guanajuato (*Dugès* [12 24]), Michoacan (*Sumichrast* [16]), Valley of Mexico (*Herrera* [17 47]), Coapa, Tlalpam (*Ferrari-Perez*), Vera Cruz, Jalapa (*de Oca* [9], *Ferrari-Perez* [28]), Orizaba (*Sumichrast* [16 36], *Ferrari-Perez*), Talea, Oaxaca (*Boucard* [10]), Cacoprieto, Tehuantepec city (*Sumichrast* [15]), Merida in Yucatan (*Schott* [34]); British Honduras, Southern Pine Ridge (*Blancaneaux*); Guatemala (*Skinner* [8]), Dueñas, San Gerónimo (*O. S. & F. D. G.* [8 21]), San Martin, Quezaltenango (*W. B. Richardson*); Nicaragua, Volcan de Chinandega, Matagalpa (*W. B. Richardson*), San Juan del Sur (*Nutting* [45]); Costa Rica (*v. Frantzius* [31 35]), San José (*Van Patten* [14], *Carmiol* [33]), Los Tabacales (*Zeledon* [33]), Cartago, San Isidro, Santa Maria (*Underwood*), La Palma, Gulf of Nicoya (*Nutting* [44]); Panama, Volcan de Chiriqui, Chitra, Calobre (*Arcé* [13]), Isthmus of Panama (*M'Leannan* [11]).—Cuba [20]; Jamaica [7]; Porto Rico [14]; Haiti [43]; Bahamas [20]; Patagonia [14].

In Central America several of the forms of Red-tailed Buzzards recognized as subspecies by the American naturalists occur.

After a careful examination of the large series of specimens in the British Museum we have come to the conclusion that there are several races of *B. borealis*, easily recognizable in their breeding-quarters, but difficult to distinguish when crowded together in their winter homes. The young birds of the various races are quite indistinguishable: much study will be necessary before we can appreciate the difference between the resident northern races and merely immigrant birds.

The following races of Red-tailed Buzzards are generally admitted by the American ornithologists:—

Buteo borealis. This is the species of the Eastern and Central United States, and is also the form which nests in Canada and the northern territories of British North America. The specimens obtained during the Boundary Commission on the 49th parallel apparently belong to this species, but as we have only young birds before us, we have been unable with certainty to determine their identity. We notice that the Red-tailed Buzzard of Montana has recently been referred to *B. calurus*, but we are inclined to consider the specimen in the British Museum from that State to be true *B. borealis.*

In Texas, whence we have received examples of at least three forms, we have seen only four which we could assign to the true *B. borealis.* From Tarpon Springs in Florida we have examined a single specimen also referable to this race, which breeds in Jamaica and visits other West Indian islands on migration. We are

therefore of opinion that the true *B. borealis* does not winter in any part of Central America, but possibly journeys to South America by way of the West Indian Islands. A single specimen was obtained at Santa Cruz in Patagonia by Darwin, and further investigations may show that *B. borealis* migrates with *B. swainsoni* into the southern portion of the South American continent. On this point, however, we are without exact information, and its winter home has yet to be correctly ascertained.

In Western North America there is a large form which has been variously called by writers *B. montanus* and *B. calurus*. This bird has not apparently received a specific designation and we propose calling it *Buteo rufescentior*. It is slightly larger than the true *B. borealis*, with much more rufous thighs, but has the blackish throat of that species, differing from it in having a reddish patch across the lower breast and abdomen, on which the black spots are conspicuous. This form extends from Sitka and British Columbia to California, and in the Henshaw Collection there are examples from Utah, Colorado, and New Mexico. Our collection also contains specimens from Zacatecas, San Luis Potosi, Colima, Jalisco, Sonora, the Valley of Mexico, Vera Cruz, Guatemala, and Nicaragua.

Buteo krideri is a pale form from the Middle States of America, having the upper plumage mottled with white, instead of rufous, especially on the scapulars and inner secondaries; the under surface is almost white, with a few longitudinal streaks on the abdomen; the thighs are even paler than in typical *B. borealis*. The tail is of a much lighter rufous colour than in the latter species, being of a light cinnamon; the black subterminal bar is either narrow or broken up, or entirely absent. A similar variation in this respect is often observed in true *B. borealis*, and a specimen from Illinois in the Henshaw Collection, at first sight referable to *B. krideri*, appears to us to be an unbarred example of *B. borealis*, having the dark chestnut tail of the latter. We can trace this light-coloured race to Zacatecas, and we have a specimen from Ciudad in Durango, while another from the Southern Pine Ridge in British Honduras may perhaps be referred to *B. krideri*.

The true *B. calurus* of Cassin is very large and dark in colour. The throat and abdomen are smoky brown and the chest-patch rufous, while the rufous thighs and under tail-coverts are also conspicuous features. The young bird has a remarkable appearance, being very dusky underneath and having broad bands across the thighs. In this immature stage the species has often been mistaken for *B. harlani*, and we refer the so-called *B. harlani* from Guatemala to *B. calurus*. The British Museum contains specimens of the last-named form from California and Mexico, and we possess examples from Zacatecas, the Sierra Madre de Nayarit, Orizaba, and Jalapa.

Buteo lucasanus from Cape San Lucas we have not seen. It is described as a dark form of *B. borealis*, with no subterminal black band on the tail. Mr. Brewster, writing to the late Capt. Bendire (Life Hist. N. Amer. Birds, p. 216), emphatically refuses to believe in the distinctness of the Cape San Lucas bird, having compared

the type specimen with a series of *B. calurus*. Capt. Bendire agrees with this determination.

Buteo costaricensis would appear to be the small form of Red-tailed Buzzard resident throughout Central America. It has a white chest-patch, instead of a rufous one, and the upper surface is uniformly coloured, the head being of the same dark chocolate-brown as the back, though occasionally rufous or grey-headed examples are seen. The throat is white, with a few narrow dark stripes, and the abdominal patch is rufous, without many dark spots; the thighs are decidedly rufous, especially in the more southern examples.

It must be stated, however, that intermediate specimens of all the above-named races are to be found in the collection of the British Museum, and that a series, when laid out for examination, shows nearly every possible link of intergradation between all the above-mentioned forms.

5. Buteo socorroensis.

Buteo borealis, var. *montanus* (nec Nutt.), Grayson, Proc. Bost. Soc. N. H. xiv. p. 301 [1].

Buteo borealis, var. *costaricensis* (nec Ridgw.), Lawr. Mem. Bost. Soc. N. H. ii. p. 302 [2].

Buteo borealis socorroensis, Ridgw. Pr. U. S. Nat. Mus. iii. pp. 194, 220 [3]; Towns. op. cit. xiii. p. 135 [4].

Buteo socorroensis, Gurney, List Diurn. Birds of Prey, p. 66 [5].

♂ *ad.* *B. caluro* similis, sed pedibus valde crassioribus; gastræo magis concolore, pallide cinnamomeo; abdomine et corporis lateribus minus distincte fusco notatis; tibiis saturate vinascenti-cinnamomeis, vinaceo-fulvo vix transfasciatis. Long. tot. 20·0, alæ 15·25, caudæ 8·0, culm. 1·0, tarsi 3·20. (Descr. maris e MSS. R. Ridgway.)

♀ *ad.* mari similis. Long. tot. 22·50, alæ 16·50, caudæ 8·75, culm. 1·18, tarsi 3·65 (*teste Ridgway*).

Hab. Socorro Island (*Grayson* [1 2 3], *Townsend* [4]).

We have not seen an example of the Red-tailed Buzzard of Socorro, and in answer to our enquiries as to its distinctive characters, Prof. Ridgway has very kindly sent us the following note:—

"*Adults* (*sexes alike in coloration*). Similar to *B. calurus*, but with much larger and stouter feet; underparts more uniformly pale cinnamomeous—cinnamon-rufous (see my 'Nomenclature of Colours') or vinaceous-cinnamon—than in most nearly similar examples of *B. b. calurus*, with dusky markings on the sides and abdomen much smaller and fewer; thighs deep vinaceous-cinnamon, indistinctly barred with paler (vinaceous-buff); longer scapulars blotched with vinaceous-cinnamon. ♂. Length (skin) 20 inches; wing 15·25; tail 8·00; culmen 1·00; tarsus 3·20; middle toe 1·62. ♀. Length (skin) 22·50 inches; wing 16·50; tail 8·75; culmen 1·18; tarsus 3·65; middle toe 1·90."

The late Colonel Grayson, who first discovered this Buzzard on Socorro, says that it is a common resident on the island, breeding there and subsisting on land-crabs. The bird's claws become much blunted from their frequent contact with the shells of these crustacea [1].

6. Buteo fumosus.

Buteo borealis, var. *montanus* (nec Nutt.), Grayson, Proc. Bost. Soc. N. H. xiv. p. 268 [1].

Buteo borealis, var. *costaricensis* (part., nec Ridgw.), Ridgw. in Baird, Brewer, & Ridgw. N. Amer. Birds, iii. p. 285 [2].

Buteo borealis, var. *calurus*, part., Lawr. Mem. Bost. Soc. N. H. ii. p. 301 (1874) [3].

Buteo borealis fumosus, Nelson, Proc. Biol. Soc. Wash. xii. p. 7 [4]; N. Amer. Fauna, no. 14, p. 37 [5].

Buteo fumosus, Sharpe, Hand-l. Birds, i. p. 256 (1899) [6].

Supra brunneo-fuscus: subtus albus, undique griseo-fusco et ferrugineo variegatus; tibiis albis, distincte et regulariter griseo-fusco transfasciatis, rhachidibus fuscis; cauda fusca, pallide fusco frequenter transfasciata. Long. tota circa 19·0, alæ 14·2, caudæ 8·5. (Descr. maris vix ad. ex Tres Marias Is., W. Mexico. Mus. nostr.)

Hab. Mexico, Tres Marias Is. (*Grayson* [1 2 3], *Forrer*, *Nelson*, *& Goldman* [4]).

This seems to be a distinct species, to judge from the single immature bird before us. No specimens of any of the continental forms are so strongly marked beneath, and the pattern of the thigh-feathers is very pronounced and peculiar. Mr. Nelson [4] describes the adult as follows:—

"Entire head and neck nearly uniform smoky brown, with scarcely a trace of lighter markings on throat or chin. Back and wings blackish brown; breast and remainder of lower surface, except neck, heavily marked with dull rusty, smoky brown, and dull whitish or buffy; no sign of lighter area on breast; the markings on ventral surface are in the form of indistinct barrings, which are most clearly defined on the tibia. Dimensions of type: wing 375 millim.; tail 206; culmen 26; tarsus 81.

"The Tres Marias form is darker and more uniformly marked below, and lacks the lighter area on the throat and breast that are found in *B. borealis socorroensis*; on the dorsal surface *B. fumosus* is readily distinguishable from *B. socorroensis* by the uniformly smoky brown head and neck, the rusty edgings to the neck and wing-feathers being entirely absent."

Mr. Nelson states that this Buzzard is very sparsely distributed. Two or three were seen on Maria Magdalena and none on Maria Cleofa [5].

Grayson [1] states that the species subsists almost entirely on the Iguana lizard and rabbits, which are very numerous.

7. Buteo harlani.

Falco harlani, Audub. Orn. Biogr. i. p. 441, t. 86 [1].

Buteo harlani, Bp. Comp. List Birds Eur. & N. Amer. p. 3 [2]; Scl. P. Z. S. 1857, p. 211 [3]; 1859, p. 389 [4]; Dresser, Ibis, 1865, p. 324 [5]; Coues, Birds N.-West, p. 352 [6]; Ridgw. in Baird, Brewer, & Ridgw. N. Amer. Birds, iii. p. 292 [7]; Sharpe, Cat. Birds Brit. Mus. i. p. 191 (pt.) [8]; Gurney, Ibis, 1876, p. 240 [9].

Buteo borealis harlani, Bendire, Life Hist. N. Amer. Birds, i. p. 217 [10]; Fisher, Bull. U. S. Dept. Agric. no. 3, p. 52 [11]; A. O. U. Check-l. N. Am. Birds, 2nd ed. p. 131 [12].

Fuliginoso-niger, capitis et cervicis plumis ad basin albis: subtus albo indistincte variegatus, tibiis vix fasciatis;

cauda grisea vix fulvo tincta, et fusco irregulariter variegata, fascia subterminali nigra. Long. tota circa 20·0, alæ 15·0, caudæ 8·7, tarsi 3·5. (Descr. exempl. typ. ex Louisiana. Mus. Brit.)

Juv. Fuliginoso-niger, maculis longitudinalibus ovatis albidis vel fulvescentibus in pogonio utroque variegatus; remigibus brunneis, nigricanti-brunneo regulariter transfasciatis et terminatis; cauda griseo-brunnea, albido terminata, tectricibus nigro 10-fasciatis; loris conspicue albis; facie laterali fere concolore, saturate brunnea; corpore subtus nigricanti-brunneo, plumis basin versus albis aut albo transfasciatis; tibiis albo maculatim fasciatis; subcaudalibus albis, late brunneo transfasciatis. (Exempl. ♂ juv. ex Dakota septentrionali. Mus. Brit.)

Hab. North America, Gulf States and Mississippi Valley[11], Texas[5].—Mexico, Vera Cruz (*Sallé*[9]), Orizaba (*Botteri*[3]), Oaxaca (*Boucard*[4]).

From the scanty material at our disposal, we are unable to say much respecting the various plumages through which this Buzzard passes; but, from an examination of the specimens before us, we are induced to consider it a very well-marked species. The black plumage and curiously mottled tail of the adult have no parallel in *B. borealis* and the allied forms.

This species appears to be resident in the Gulf States of North America, as far east as Georgia and Florida and the lower Mississippi Valley, and casual specimens have been found in Iowa, Kansas, Illinois, and Pennsylvania; there is an immature example of it from North Dakota in the British Museum. With regard to its distribution in Central America, we are of opinion that the majority of specimens referred to *B. harlani* have been wrongly identified, and this has proved to be the case in all those which have come under our notice. Gurney[9] has described a Buzzard from Vera Cruz, in the Norwich Museum, which must certainly be an immature example of *B. harlani*; but it is probable that the bird obtained by Botteri at Orizaba[3] was really *B. calurus*, to which we think all our Guatemalan specimens should be referred.

In habits *B. harlani* much resembles the Red-tailed Buzzards, but is described as being very shy and wary, and its call-note is rather more drawn out. It affects the wild and unfrequented districts of Florida, where Dr. W. L. Ralph says that it breeds, but at present the nest and eggs have not been identified.

8. **Buteo lineatus.**

Barred-breasted Buzzard, Lath. Gen. Syn. i. p. 56[1].

Falco lineatus, Gm. Syst. Nat. i. p. 268[2].

Buteo lineatus, Scl. P. Z. S. 1857, p. 211[3]; Sharpe, Cat. Birds Brit. Mus. i. p. 191[4]; Bendire, Life Hist. N. Amer. Birds, i. p. 219, t. 7. ff. 1–5[5]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 62, t. 8[6]; A. O. U. Check-l. N. Amer. Birds, p. 131[7].

Buteo elegans, Cassin, Pr. Ac. Phil. 1855, p. 281[8]; Scl. & Salv. P. Z. S. 1869, p. 364[9].

♀. Supra brunneus, rufo tinctus, pileo pallidiore brunneo rufo, plumis striolatim rufo marginatis; scapularibus alisque, dorso imo, uropygio et supracaudalibus magis cinerascenti-brunneis, albo fasciatim notatis vel apicatis; tectricibus alarum minimis ferrugineis, plagam magnam exhibentibus; remigibus extus conspicue albo fasciatis; rectricibus nigricantibus, albo terminatis et præterea fasciis quinque albis transnotatis; loris albicantibus; facie laterali albida, rufo lavata et anguste brunneo lineata, genis fuscioribus, fasciam mystacalem formantibus; gutture albido, rhachidibus plumarum fuscis; gastræo

reliquo cinnamomeo-rufo, rhachidibus nigris conspicuis ; præpectoris plumis concoloribus, pectore tamen et abdomine plus minusve albido transfasciatis ; tibiis regulariter cinnamomeo fasciatis, sed subcaudalibus vix rufo-fasciatis, subalaribus et axillaribus pectori concoloribus et eodem modo fasciatis ; tectricibus primariorum inferioribus et remigibus infra albis, conspicue nigro transfasciatis. Long. tota 16·5, culm. 1·25, alæ 11·9, caudæ 7·3, tarsi 3·05. (Descr. fem. ex Mexico occ. in Mus. Brit.)

♂ feminæ similis, vix minor.

Juv. Brunneus, rufo vel ochraceo variegatus, remigibus rufescenti-albo late fasciatis ; cauda brunnea, rufescenti-grisea 8–9-fasciata : subtus albidus, distincte brunneo cordatim striolata. (Descr. spec. ex Zacatecas. Mus. nostr.)

Hab. Eastern N. America to Manitoba and Nova Scotia, west to Texas and the Plains, south to the Gulf States, Western United States, from W. Texas to California and Oregon, south into Lower California, Sonora, and Chihuahua.—Mexico (*Mus. Brit.*[4]), city of Mexico (*Le Strange*[9]), Orizaba (*Botteri*[3]), Zacatecas (*W. B. Richardson*).

The Red-shouldered Buzzard is aptly so-called, for the old birds have a conspicuous chestnut shoulder-patch, and even the young may be distinguished by a similar rufous area on the wing-coverts. The tail is distinctly banded, and has *five* (in very old birds *four*) light bars. In young individuals the dark bars are generally seven in number, the subterminal one being distinctly broader; the light bars vary from eight to nine. The white chequering of the quills is also a well-marked character.

The western form (*B. elegans*) is recognized as a distinct race by American ornithologists, on account of its uniformly rufous chest, which is less barred with buff than in examples from the Northern States. Age has undoubtedly something to do with this peculiarity, and we believe that the older birds lose much of the cross-barring on the underparts and become entirely rufous below. We have birds from Texas answering to the description of *B. elegans*; but we have also in the Henshaw series both barred and uniform breasted specimens from Chester Co., Pennsylvania, and examples of both races from the same localities in Texas. We have failed, therefore, to find valid characters for the separation of *Buteo elegans* from *B. lineatus*. The Florida form, *B. alleni*, is said by Professor Ridgway to have a greyish head, but in our series from that State many specimens are as rufous on the upper surface as typical examples of *B. lineatus*, while, on the other hand, we have grey-headed birds from New York State. The Florida bird is decidedly smaller, and the shoulder-patch is rather cinnamon-rufous than chestnut, and thus we are inclined to admit *B. alleni* as a recognizable species.

B. lineatus is found in Sonora and Chihuahua, according to the 'A. O. U. Check-list'[7], but its recorded occurrences within our limits are very few. In the British Museum there are two specimens labelled "Mexico," also one adult bird from "Western Mexico," purchased many years ago from Mr. Edward Bartlett, who received it from Mr. Dorman[4]. It has been recorded from Orizaba, where Botteri obtained an example[3], and Le Strange also met with the species in the Valley of Mexico[9]; Mr. Richardson, too, has sent us an immature specimen of it from Zacatecas.

In many parts of Canada and the United States the Red-shouldered Buzzard is common, and its habits are similar to those of the Red-tailed Buzzard (*B. borealis*). Like the last-named species, it seldom attacks poultry, but feeds largely on mice and other small mammals, reptiles, frogs, and insects. The nest is smaller than that of *B. borealis*, and consists of twigs with a lining of leaves. The eggs are usually three in number, but four, five, and six are occasionally found [5].

It breeds on the coast of Oregon southward to Lower California.

Section D. *Minores. Alæ remigibus externis tribus in pogonio interno excisis.*

9. **Buteo swainsoni.**

Falco buteo, Aud. Birds N. Am. t. 372 (nec Linn.) [1].

Buteo swainsoni, Bp. Comp. List, p. 3 [2]; Cassin, in Baird's Birds N. Am. p. 19, t. 13 [3]; Dugès, La Nat. i. p. 138 [4]; Salvin, Ibis, 1875, pp. 372, 377 [5]; Herrera, La Nat. (2) i. pp. 176, 320 [6]; Bendire, Life Hist. N. Amer. Birds, p. 236, t. 8. ff. 1–6 [7]; Cherrie, Auk, 1892, p. 328 [8]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 72, t. 9 [9]; Allen, Bull. Amer. Mus. Nat. Hist. v. p. 34 [10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 132 [11].

Buteo insignatus, Cassin, Birds Cal. & Texas, p. 102, t. 31 [12]; Scl. P. Z. S. 1856, p. 285 [13]; Scl. & Salv. Ibis, 1859, p. 216 [14].

Buteo obsoletus, Sharpe, Cat. Birds Brit. Mus. i. p. 184 (nec Gm.) [15].

Buteo albonotatus, Lawr. Ann. Lyc. N. Y. ix. p. 133 (nec Gray) [16].

Saturate brunneus, tectricibus alarum dorso concoloribus; remigibus nigris, intus cinerascentibus, fasciis nigris indistincte indicatis; supracaudalibus lateralibus albo nigroque fasciatis, et rufo tinctis; rectricibus cinerascenti-brunneis, anguste albo terminatis, et fasciis 10–11 nigricantibus notatis, fascia obscura subterminali latiore; loris albicantibus; facie laterali nigricanti-brunnea; genis nigris; gula pure alba, anguste nigro striata; gutture imo, præpectore et pectore summo cinerascenti-brunneis, rufo adumbratis; pectore imo et gastræo reliquo albicantibus, fasciis aut maculis sagittiformibus brunneis vel cinnamomeis notatis; subcaudalibus fere immaculatis; rostro nigricanti-plumbeo, mandibula flavicante; cera et pedibus flavis, unguibus nigris; iride brunnea. Long. tota circa 17·5, alæ 14·6, caudæ 6·8, tarsi 2·5. (Descr. feminæ ex Dueñas, Guatemala. Mus. nostr.)

♂. Feminæ similis, sed plaga præpectorali cinnamomea nec brunnescente; gula omnino alba. Long. tota circa 18·0, alæ 15·2. (Descr. maris ex Long Coteau River, Dakota. Mus. nostr.)

♂ *juv.* Brunneus; loris, fronte basali et superciliis albis; capite et cervice fere albis, brunneo longitudinaliter striatis: subtus albus, præpectoris lateribus brunneo maculatis, pectore ipso anguste brunneo striolato; hypochondriis brunneo fasciatim notatis. Ala 14·9. (Descr. maris ex Baltazar, Puebla. Mus. nostr.)

Hab. Western N. America, from Wisconsin, Illinois, Arkansas, and Texas to the Pacific coast, north to the Arctic regions [11]. — Mexico (*Sallé* [13]), Fronteras (*F. Robinette* [10]), Guanajuato, Guadalajara (*Dugès* [4]), Valley of Mexico (*Herrera* [6]), San Baltazar in Puebla (*Ferrari-Perez*); Guatemala, Dueñas (*O. S.* [14]); Costa Rica, San José (*Carmiol* [16], *Cherrie* [8]), Tucurriqui (*Arcé*).—South America generally, from Colombia to Patagonia [15], Masafuera I. [5].

The variations in plumage undergone by this species are remarkable. The adult males may be distinguished by their cinnamon-coloured chest, as figured by Dr. A. K. Fisher [9]. The females are rather larger, and have a darker under surface than the

male, with the shield-like patch on the fore-neck of a dark ashy brown. Between this phase of plumage and the not uncommon one of a sooty-brown colour with rufous thighs, and thence to nearly black individuals, every kind of gradation is visible in a series. Swainson's Buzzard takes the place in the New World of the Common Buzzard (*Buteo vulgaris*) of the Old World, and appears to be of similar habits; it is, however, distinguished from the European bird and from most of its American congeners by having only three, instead of four, of the outer primaries excised on the inner web.

In the Eastern United States *Buteo swainsoni* is a rare bird, but in the Western and Central States and on the Pacific side of N. America it breeds regularly and, in some localities, in great numbers. In Manitoba and Western Canada it is also an abundant summer resident, and its northern breeding-range extends to the Yukon River in Alaska and the southern parts of the Mackenzie and Anderson rivers. Southward it is found nesting in S.E. Texas, Arizona, New Mexico, and even in Southern California [7].

The only record we have at present of its breeding within our limits is from Mr. W. Lloyd, who informed Capt. Bendire that he found it nesting on the prairies west of Chihuahua in March. In September it was obtained at Fronteras in N.E. Sonora by Mr. Robinette during the Lumholz Expedition, but it is chiefly on migration that Swainson's Buzzard is met with in the Neotropical Region. It has been recorded by Dugès [4] from Guanajuato and Guadalajara and from the Valley of Mexico by Herrera. We have received from Mr. Ferrari-Perez a specimen from San Baltazar in Puebla.

We obtained a single example at Dueñas in Guatemala, but the bird is evidently rare in this country as well as in Costa Rica, where it has been met with at San José by Carmiol [18] and Cherrie [8] and at Tucurriqui by E. Arcé. In South America it is found in many districts during the northern winter, and arrives in Argentina and Northern Patagonia in large flocks. In similar vast numbers the species returns to its breeding-ground in North America, and Mr. F. Stephens says that he has seen hundreds together.

Captain Bendire remarks that it lives in such perfect harmony with its smaller neighbours that some birds, such as *Tyrannus verticalis* and *Icterus bullocki*, build in close vicinity to, or actually in, its nest; this is rather roughly built, at heights varying from three to sixty feet above the ground in the prairies, and is sometimes placed on the ground. Its food consists chiefly of small rodents, as well as grasshoppers and other insects.

The eggs are oval, greenish white, with distinct or obsolete spots of brown or grey [7].

10. **Buteo latissimus.**

Falco latissimus, Wils. Am. Orn. vi. p. 92, t. 54. f. 1 (correction) [1].

Astur latissimus, Jard. ed. Wils. Am. Orn. ii. p. 294 [2].

Buteo latissimus, Sharpe, Cat. Birds Brit. Mus. i. p. 193 [3]; Boucard, P. Z. S. 1878, p. 44 [4]; Sumichrast, La Nat. v. p. 236 [5]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [6];

Cherrie, Auk, 1890, p. 333[7]; 1892, p. 328[8]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 522[9]; Bendire, Life Hist. N. Amer. Birds, p. 24, t. 7. ff. 10–13[10]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 79, t. 10[11]; A. O. U. Check-list N. Amer. Birds, p. 133[12].

Falco pennsylvanicus, Wils. Am. Orn. vi. p. 92, t. 54. f. 1 (nec vi. t. 46. f. 1 = *Accipiter velox*)[13].

Buteo pennsylvanicus, Scl. P. Z. S. 1857, p. 211[14]; Scl. & Salv. Ibis, 1859, p. 217[15]; P. Z. S. 1864, p. 369[16]; Lawr. Ann. Lyc. N. Y. vii. p. 288[17]; ix. p. 133[18]; Bull. U. S. Nat. Mus. no. 4, p. 41[19]; v. Frantz. J. f. Orn. 1869, p. 368[20]; Salv. P. Z. S. 1870, p. 215[21]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 167[22].

♂. Supra brunneus, griseo adumbratus; tectricibus alarum minimis et medianis dorso concoloribus, majoribus autem remigibusque grisescenti-brunneis, apicem versus saturate brunneis, et fasciis saturate brunneis paucis notatis; supracaudalibus, præcipue his lateralibus, late albo maculatis vel fasciatis; cauda saturate brunnea, brunneo subterminaliter ante marginem apicalem terminata, et fasciis albidis 3-notata, fascia brunnea mediana et subterminali latissimis; gutture albido, anguste brunneo striolato; fascia mystacali saturate brunnea: corpore reliquo subtus maculis rufis et albis fasciatim variegato, hypochondriis tibiisque rufo magis distincte fasciatis; subcaudalibus albis; subalaribus albis, maculis sagittiformibus parvulis notatis; axillaribus albis, rufo fasciatis; remigibus intus albis. Long. tota 14·5, alæ 10·6, caudæ 6·0, culm. 1·1, tarsi 2·6. (Descr. maris ex Boquete de Chitra. Mus. nostr.)

♀. Mari similis, sed paullo saturatior et subtus brunneo magis marmoratus. Long. tota circa 17·0, alæ 10·9. (Descr. fem. ex Dueñas. Mus. nostr.)

Juv. Brunneus, rufo variegatus; pileo et interscapulio albido striolatis; supracaudalibus lateralibus conspicue albo fasciatis; cauda brunnea, fasciis 8 saturatioribus, fascia subterminali latiore ante apicem pallidam: subtus albus, maculis longitudinalibus et cordatis; tibiis magis distincte brunneo fasciatis. (Descr. exempl. juv. ex Dueñas. Mus. nostr.)

Hab. Eastern North America, from New Brunswick and the Saskatchewan Region to Texas.—Mexico, Presidio de Mazatlan (*Forrer*), Volcan de Colima (*W. B. Richardson*), Orizaba (*Botteri*[5 14]), Coatepec (*M. Trujillo*), Jalapa (*Ferrari-Perez*[22]), Santa Efigenia (*F. Sumichrast*[5 19]); Guatemala (*Skinner*[15]), Santa Rosa above Salamá (*O. S.*), Dueñas, San Gerónimo (*O. S. & F. D. G.*); Nicaragua, La Libertad and Santo Domingo, Chontales, Leon (*W. B. Richardson*), Rio Escondido (*C. W. Richmond*[9]); Costa Rica[7], San José (*v. Frantzius, C. F. Underwood, G. K. Cherrie*[8], *J. Carmiol*[18], *A. Boucard*[4]), Jiménez (*J. Zeledon*[6]), Angostura (*J. Carmiol*[18]), Carillo, Barba (*C. F. Underwood*), San Lucas, Talamanca (*Mus. Nac. Costa Rica*); Panama (*J. M'Leannan*[16 17]), Boquete de Chitra, Calovevora, Calobre, Volcan de Chiriqui (*E. Arcé*[21]), Paraiso Station (*Hughes*).—Colombia[3]; Ecuador; Venezuela; Upper Amazons[3]; Greater and Lesser Antilles.

The small size of *B. latissimus* is perhaps the chief characteristic by which it can be istinguished, but it may also be recognized by the excisions on the inner web of the primaries, only three of which exhibit this peculiarity. The species is, on this account, nearly allied to *B. swainsoni* and *B. albifrons*. The marking of the tail in *B. latissimus* is peculiar, the adult having three dark and two light bars, while the young birds have five dark bars, of which the subterminal one is much the broadest.

It breeds throughout the greater part of North America[12], as far north as New Brunswick, Southern Canada, and the Saskatchewan region, becoming gradually scarcer

as a resident towards the Southern United States, and is apparently only a winter migrant in Central America. The series in our collection shows that *B. latissimus* passes through the whole of our region, and extends to the West-Indian Islands, as well as to South America, as far as the valley of the Amazons. This Buzzard feeds on small rodents, reptiles, and insects of various sorts, seldom attacking birds of any kind; it is somewhat quiet and sluggish in its habits, except in the breeding-season or when its nest is in danger.

The nest is roughly made of sticks, with a lining of bark and a few green twigs, sometimes built very near the ground. The eggs are generally two or three in number, though occasionally four, and even five, are found. The colour is dull greyish white, with an occasional green tinge, and faint markings of grey or reddish brown [10].

11. **Buteo brachyurus.**

Buteo brachyurus, Vieill. Nouv. Dict. d'Hist. Nat. iv. p. 477 [1]; Salv. P. Z. S. 1870, p. 215 [2]; Ridgway, Proc. U. S. Nat. Mus. viii. p. 578 [3]; Cherrie, Auk, 1892, p. 328 [4]; Bendire, Life Hist. N. Amer. Birds, i. p. 246, t. 8. f. 7 [5]; Richmond, Proc. U. S. Nat. Mus. xvi. p. 522 [6]; Fisher, Bull. U. S. Dept. Agric. no. 3, p. 83 [7]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 133 [8].

Asturina brachyura, Scl. & Salv. Ibis, 1859, p. 218 [9].

Buteola brachyura, Scl. & Salv. P. Z. S. 1869, p. 130 [10]; Sharpe, Cat. Birds Brit. Mus. i. p. 201 [11]; Gurney, Ibis, 1876, p. 479 [12]; Scl. & Salv. P. Z. S. 1879, p. 540 [13]; Sumichrast, La Nat. v. p. 236 [14]; Tacz. Orn. Pérou, i. p. 118 [15]; Salv. Ibis, 1890, pp. 84, 89 [16].

Buteo fuliginosus, Scl. P. Z. S. 1858, p. 356 [17]; id. Tr. Z. S. iv. p. 267, t. 62 [18]; Cass. in Baird Cass., & Lawr. Birds N. Amer. t. 15. f. 1 [19]; Scl. & Salv. Ibis, 1860, p. 401 [20]; Gurney, Ibis, 1876, p. 479 [21]; Scott, Auk, 1889, p. 243 [22]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 236 [23].

Asturina albifrons, Scl. P. Z. S. 1859, p. 368 (nec Wied) [24].

Buteo minutus, Pelz. Orn. Bras. pp. 2, 396 [25]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 42 [26].

Buteo obsoletus, pt., Sharpe, Cat. Birds Brit. Mus. i. p. 184 [27].

Supra saturate brunneus, fere unicolor, plumis pallidiore brunneo obscure marginatis; nucha albo notata; supracaudalibus albido terminatis, grisescenti-brunneo, extus albo, fasciatis; alis brunneis, remigibus nigricantibus, anguste albo terminaliter limbatis, et intus obscure fasciatis; rectricibus cinerascenti-brunneis, anguste albo terminatis, fasciis 6 nigricantibus notatis, fascia terminali latiore; loris et basi frontis conspicue albis; facie laterali et regione parotica nigricantibus, unicoloribus; genis imis et gutture albis: corpore subtus pure albo, gutture imo et præpectore saturate brunneis, rufo vix variegatis, plumis præpectoralibus paucis rhachidem angustam nigram exhibentibus; subalaribus, axillaribus et remigibus intus pure albis, horum pogonio interno griseo marmorato vel fasciato. Long. tota 16·5, alæ 12·8, caudæ 6·4, culm. 1·2, tarsi 2·5. (Descr. exempl. ex Guatemala. Mus. Brit.)

Juv. Supra nigricanti-brunneus, vix rufo lineatim variegatus; supracaudalibus lateralibus rufo fasciatis; rectricibus cinerascenti-brunneis, fasciis 8 nigricantibus notatis; loris et fronte basali albis; supercilio fulvescente; fascia laterali fulvescente, nigro lineata; genis nigris, fasciam latam formantibus: corpore subtus ochrascenti-fulvo, tibiis lætioribus vix cinnamomeis; colli et præpectoris lateribus nigro late striolatis; hypochondriis et abdomine medio vix anguste nigro lineatis; subalaribus et axillaribus læte ochraceis; remigibus intus fusco fasciatim in pogonio interno notatis. (Descr. exempl. ex Irazu. Mus. nostr.)

Forma melan. Fuliginoso-niger, nuchæ plumis ad basin albis; remigibus saturate brunneis, ad apicem nigris et intus nigro fasciatis; rectricibus cinerascenti-brunneis, fasciis 6 nigris notatis; facie laterali et corpore

subtus nigris; remigibus intus albis, griseo marmoratis vel fasciatis. Long. tota circa 15·8, alæ 11·7, caudæ 6·2, tarsi 2·25. (Descr. exempl. ex Alvarado, Mexico. Mus. nostr.)

Juv. Fuliginoso-niger; cauda fasciis nigris 8 notata: subtus fasciis celatis albis vel ochraceis variegatus; facie laterali nigricante, regione parotica nigro lineata. (Descr. maris juv. ex Miami, Florida. Mus. nostr.)

Hab. North America, Florida [5 8 22].—Mexico (*Boucard* [27]), Tamaulipas (*Mus. Norv.* [17 18]), Alvarado (*Ferrari-Perez*), Jalapa (*de Oca* [21 24]), Tehuantepec city [26], Tonala [14] (*Sumichrast*), Cozumel Island (*U. S. S.* '*Albatross*' [3 16]); Guatemala [11 20] (*Skinner* [9]), Coban (*O. S.* [20]); Nicaragua, Escondido River (*Richmond* [6]); Costa Rica, San José (*Cherrie* [4]), Irazu (*Underwood*), San Antonio (*v. Frantzius*), La Palma (*Zeledon, v. Frantzius*); Panama, Calobre, Calovevora [2] (*Arcé*).—Colombia [13]; Venezuela [22]; Amazons [12]; Brazil [25]; Peru [15]; Bolivia.

The black form of this Buzzard (*B. fuliginosus*) was originally described by Dr. Sclater [17] from a specimen from Tamaulipas in the Norwich Museum. In the 'Catalogue of Birds' (vol. i. p. 185) the species was referred to *B. obsoletus* (i. e., *B. swainsoni* of this work), but this was a mistake. Since the latter work was published *B. fuliginosus* has been considered by some ornithologists to be merely a melanistic phase of *B. brachyurus*, whilst others treat the two forms as distinct. The latter view has recently been taken by Professor Ridgway ('Manual of North American Birds,' 2nd edit. pp. 236, 237). Both forms occur in Florida, and throughout Central America to Colombia, but in other portions of South America only the white-breasted bird has been found, and the black-breasted one is either very rare or has escaped observation.

The question as to whether *Buteo brachyurus* and *B. fuliginosus* are different species, or whether they are phases of a single dimorphic form, must, in face of the evidence produced by Mr. W. E. D. Scott, who has found the two supposed species breeding together in Florida [22], now be considered as settled. In one instance a pair of birds was shot by him, and the female proved to be the white-breasted form (*B. brachyurus*), while the male was the black *B. fuliginosus*. Subsequent observations in the same State have tended to confirm this sexual distinction of colour in the male and female; but we are inclined to believe that these differences in the colour of the plumage may occasionally be reversed in the two sexes. The bird which has hitherto been called *B. fuliginosus* must, in future, be considered as the melanistic form of *B. brachyurus*. In the specimens examined by us we have not found the slightest sign of any intergradation, although, in the winter habitat of the species in South America, the two forms have not as yet been found in the same locality.

In a specimen of the dark form (*B. fuliginosus*) from Mexico, which may not be a very old bird, the plumage is not so black as in some others in our collection. One from Calobre, in Panama, has a grey shade over the black plumage, and has the under tail-coverts broadly banded with white, while the under surface of the quills is almost entirely black, with only some ovate white marks towards the base of the primaries

and obscure greyish bars on the secondaries. Five black tail-bands can be traced, the subterminal one being much broader than the rest, whereas in one Mexican specimen there is scarcely any increase in the width of this bar. Another bird in our collection from Calovevora is jet-black. In both the Veraguan examples there is only a faint trace of white or grey bars on the upper tail-coverts.

From the evidence at hand, *B. brachyurus* is a resident in Florida, though Dr. Ralph states that it is more commonly noticed in spring and summer [5]. We have a few specimens from that locality, received from Mr. Scott, one white-breasted individual (*B. brachyurus*) procured by him at Chasham in November, and two black-breasted birds (*B. fuliginosus*) obtained at Miami in October and on the Caloosahatchie River in January. Gurney [21] states that in the Norwich Museum there is an example of it from Jalapa, in addition to the type; Mr. Ferrari-Perez has sent us one from Alvarado; and Sumichrast has recorded the species from Tonala and Tehuantepec city. Thence we trace its range to Panama and to the northern and central parts of South America, where it doubtless occurs only as a winter visitor.

ASTURINA *.

Asturina, Vieillot, Analyse, p. 24 (1816); Sclater & Salvin, P. Z. S. 1869, p. 129; Sharpe, Cat. Birds Brit. Mus. i. p. 202.

This genus is very closely allied to *Buteo*, and is by many authorities considered an intermediate link between the Buzzards and the Goshawks. With the latter, however, we are unable to trace much affinity, and we prefer to consider the Neotropical genus *Asturina* as thoroughly Buteonine in its relations. In the 'Catalogue of Birds' the form of the nostril was considered a character for its definition, but a far better one is the shape of the wing, which is long and pointed in the Buzzards, and rounded in *Asturina*, in which genus the primaries are but little longer than the secondaries.

Both the species of *Asturina* are found within our limits. They are grey birds, having the four outer primaries excised on the inner web; the young differ considerably from the adults in plumage, so that the immature specimens are liable to be confounded with the young of the species of *Buteo*.

1. Asturina nitida.

Plumbeous Falcon, Lath. Gen. Syn., Suppl. p. 37 [1].

Falco nitidus, Lath. Ind. Orn. i. p. 41 [2]; Temm. Pl. Col. i. tt. 87, 294 [3].

Asturina nitida, Scl. & Salv. P. Z. S. 1864, p. 369 [4]; Ex. Orn. p. 180 [5]; Lawr. Ann. Lyc. N. Y. vii. p. 316 [6]; Sharpe, Cat. Birds Brit. Mus. i. p. 203 [7]; Hand-l. Birds, i. p. 257 [8].

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* The heading to the subfamily AQUILINÆ was accidentally omitted on p. 54: it includes *Archibuteo, Buteo, Asturina, Rupornis, Urubitinga, Leucopternis, Busarellus, Heterospizias, Harpyhaliaetus, Morphnus, Thrasaetus, Aquila, Spizaetus,* and *Spiziastur*.

Supra schistacea, pallide griseo regulariter transfasciata; uropygio nigro, albo late marginato: subtus albo et griseo regulariter crebre transfasciata; gula et tectricibus subcaudalibus albis; remigibus et apicibus nigris, in pogonio interno albis nigro sparsim transfasciatis; subalaribus albis, griseo fasciatis; cauda nigra, fascia integra alba notata, altera incompleta in dimidio proximo, apice albo; rostro nigro, cere et pedibus flavis. Long. tota circa 16·0, alæ 10·3, caudæ 6·8, tarsi 2·7, rostri a rictu 1·3. (Descr. feminæ ex Panama. Mus. nostr.)

♂ feminæ similis, sed paulo minor.

Juv. Supra fusca; plumis ad basin albis; capite summo et cervice postica plerumque albis, plumis omnibus fusco terminatis; alis extus fuscis, fulvo variegatis et nigro transfasciatis; remigibus medialiter cervinis nigro fasciatis, apicibus nigris: subtus lactescenti-alba, fusco guttata; tibiis immaculatis; alis subtus fere immaculatis pallide cervinis, remigibus tantum sparsim nigro fasciatis; cauda nigra, cervino transfasciata et terminata. (Descr. exempl. ex Chapada, Matto Grosso, Brazil. Mus. nostr.)

Hab. Panama (*M'Leannan* [4 6]).—Colombia [7]; Ecuador; Venezuela; Guiana [7]; Amazons [7]; Brazil [7].

This species, which is widely distributed throughout the greater part of South America, extends as far north as Panama, where it was procured by M'Leannan. In habits it appears to resemble in every respect its better-known northern representative, *A. plagiata*.

2. **Asturina plagiata.**

Buteo plagiatus, Licht. Nomencl. p. 3 [1].

Asturina plagiata, Schl. Mus. Pays-Bas, Asturinæ, p. 1 [2]; Scl. & Salv. P. Z. S. 1869, p. 130 [3]; 1870, p. 838 [4]; Ex. Orn. p. 179, t. 90 [5]; Salv. Ibis, 1869, p. 317 [6]; 1870, p. 114 [7]; 1889, p. 374 [8]; 1890, p. 89 [9]; Cat. Strickl. Coll. p. 484 [10]; Finsch, Abh. naturw. Ver. zu Bremen, 1870, p. 325 [11]; Lawr. Mem. Bost. Soc. N. H. ii. p. 298 [12]; Bull. U. S. Nat. Mus. no. 4, p. 39 [13]; Sumichrast, La Nat. v. p. 236 [14]; Sharpe, Cat. Birds Brit. Mus. i. p. 204 [15]; Nutting, Pr. U. S. Nat. Mus. v. p. 403 [16]; vi. pp. 377 [17], 388 [18]; Boucard, P. Z. S. 1883, p. 456 [19]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 166 [20]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [21]; Herrera, La Nat. (2) i. pp. 176, 320 [22]; Stone, Pr. Ac. Phil. 1890, p. 205 [23]; Allen, Bull. Am. Mus. N. H. v. p. 34 [24]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 85 [25].

Falco nitidus, Licht. Preis-Verz. Mex. Vög. p. 3 (nec Lath.), *cf.* J. f. Orn. 1863, p. 58 [26]; Wagler, Isis, 1831, p. 517 [27].

Asturina nitida (nec Lath.), Scl. P. Z. S. 1857, pp. 201 [28], 227 [29]; 1859, pp. 368 [30], 389 [31]; 1864, p. 178 [32]; Scl. & Salv. Ibis, 1859, p. 217 [33]; R. Owen, Ibis, 1861, p. 68 [34]; Salv. Ibis, 1866, p. 204 [35]; v. Frantz. J. f. Orn. 1869, p. 369 [36].

Morphnus schistaceus, Scl. P. Z. S. 1857, p. 227 [37].

Urubitinga ——?, Scl. & Salv. Ibis, 1859, p. 216 [38].

Asturina polionota, Cab. J. f. Orn. 1869, p. 208 [39].

A. nitidæ similis, sed supra schistacea unicolor, griseo haud transfasciata; cera pedibusque flavis; iride brunnea.

Juv. Ab *A. nitida* juv. tibiis fusco-fasciatis dignoscenda.

Hab. North America, Texas, Arizona.—Mexico (*Deppe & Schiede* [26], *Wagler* [27]), Hacienda de la Cruz, Rio Camacho in Nuevo Leon (*F. B. Armstrong*), Sierra Madre above

Ciudad Victoria, Xicotencal, Tampico (*W. B. Richardson*), Jalapa (*Sallé* [28], *de Oca* [30], *Ferrari-Perez* [20]), Laguna Verde (*M. Trujillo*), Santana, Hacienda Tortugas, Plan del Rio [20], Chietla (*Ferrari-Perez*), Santecomapam [29 37], Talea [31], Playa Vicente [31] (*Boucard*), Valley of Mexico (*Herrera* [22]), city of Mexico (*White* [32]), Sonora (*W. Lloyd*), Fronteras, Oputo (*Robinette* [24]), Presidio de Mazatlan (*A. Forrer*), Mazatlan (*Grayson* [12], *Bischoff* [11], *Forrer*), Santiago, Territorio de Tepic, Huayimic, Sierra Madre de Jalisco, Plains of Colima, Volcan de Colima, San Benito, Huehuetan and Tuxtla, Chiapas, Salina Cruz, Oaxaca (*W. B. Richardson*), Manzanillo Bay (*Xantus*), Santana near Guadalajara (*W. Lloyd*), Tehuantepec, Chihuitan, Sta. Efigenia, Tonala (*F. Sumichrast* [13]), Tizimin, Peto, Yok-satz (*G. F. Gaumer* [19]), Tunkas (*Stone & Baker* [23]); GUATEMALA [33] (*Constancia* [10], *Skinner* [38]), Chimalapa (*O. S.*), San Gerónimo (*O. S.*, *R. Owen* [34]), Escuintla (*O. S.*), Savana Grande (*O. S. & F. D. G.*), Retalhuleu (*W. B. Richardson*); SALVADOR, Acajutla (*Zeledon* [21]), La Libertad (*W. B. Richardson*); HONDURAS, Ruatan I. (*G. F. Gaumer* [8 9]), San Pedro (*G. M. Whitely* [4]); NICARAGUA, Chinandega (*W. B. Richardson*), San Juan del Sur [17], Sucuyá [18] (*Nutting*); COSTA RICA (*v. Frantzius* [36], *Ellendorf* [39]), La Barranca (*Arcé*), La Palma (*Nutting* [16]), San Mateo (*Zeledon* [21]).

The Grey Buzzard-Hawk of Central America is easily distinguished from its southern relative, *A. nitida*, by its more uniformly grey coloration, and by the absence of the light bars which are visible in the last-named species.

As will be seen by the list of localities given above, *A. plagiata* is very generally distributed throughout the countries of Central America as far south as Costa Rica. In Mexico Sumichrast says that it is one of the most abundant of the Birds of Prey in the south, east, and west of the country [14]. Herrera [22] speaks of it as being very plentiful in the more southern parts of the Valley of Mexico, especially in summer and autumn.

In Guatemala it is abundant in the low country bordering both coasts, occurring more sparingly inland.

Robert Owen found it breeding at San Gerónimo. He states [34] that the nest is usually placed in high trees which are scattered over the plain, not unfrequently within a few yards of the Indian ranchos. Two pure white eggs are the usual complement; the inner coating of the shell is sea-green, a character which suggests the relationship of *Asturina* with *Astur*.

A. plagiata has been known to nest in the province of Tamaulipas, but it doubtless breeds throughout the greater part of Mexico; in Costa Rica it is apparently rare, and may be only a winter migrant [16]. In the south of Arizona and New Mexico it is a summer visitor, arriving early in March or April. Bendire thinks that it may perhaps nest along the Lower Rio Grande Valley in Texas as well. In Arizona the nest is

built of fresh twigs, and is usually placed at a considerable height on a cotton-wood tree. The eggs vary from two to three in number, and are usually white, but Bendire mentions examples which had a few buff-brown spots near the larger end.

The food consists of small rodents, birds, lizards, and insects.

RUPORNIS.

Rupornis, Kaup, Classif. Säug. u. Vög. p. 120 (1844).
Asturina, partim, Scl. & Salv. P. Z. S. 1869, p. 129, et auctt.; Sharpe, Cat. Birds Brit. Mus. i. p. 202.

The members of the genus *Rupornis* are in structure very closely allied to those of *Asturina*, with which Dr. Bowdler Sharpe has united them; but they are browner, and thus resemble the species of the genus *Buteo* in general appearance. There is but slight variation in colour between the old and young birds. The first five primaries are excised on the inner web, and the species are also recognizable by their rufous inner quill-lining. One of the species of *Rupornis* is found throughout Central America.

1. Rupornis ruficauda.

Falco magnirostris (nec Gm.), Licht. Preis-Verz. Mex. Vög. p. 3 (1830), *cf.* Cab. J. f. Orn. 1863, p. 58 [1]; Wagler, Isis, 1831, p. 517 [2].
Asturina magnirostris (nec Gm.), Scl. P. Z. S. 1856, p. 285 [3]; Moore, P. Z. S. 1859, p. 52 [4]; Scl. P. Z. S. 1859, p. 368 [5]; Scl. & Salv. Ibis, 1859, p. 217 [6]; Cass. Proc. Ac. Phil. 1860, p. 132 [7]; Lawr. Ann. Lyc. N. Y. vii. p. 316 [8]; Scl. P. Z. S. 1864, p. 178 [9]; Lawr. Ann. Lyc. N. Y. viii. p. 178 [10]; Salv. P. Z. S. 1867, p. 158 [11]; Lawr. Ann. Lyc. N. Y. ix. pp. 134 [12], 207 [13]; v. Frantz. J. f. Orn. 1869, p. 369 [14].
Asturina ruficauda, Scl. & Salv. P. Z. S. 1869, p. 133 [15]; Ex. Orn. t. 88 [16]; Salv. Ibis, 1869, p. 317 [17]; P. Z. S. 1870, p. 215 [18]; Scl. & Salv. P. Z. S. 1870, p. 838 [19]; Sharpe, Cat. Birds Brit. Mus. i. p. 205 [20]; Salv. P. Z. S. 1883, p. 426 [21]; Boucard, P. Z. S. 1883, p. 456 [22]; Salv. Ibis, 1885, p. 193 [23]; 1889, p. 374 [24]; 1890, p. 89 [25].
Buteo (*Rupornis*) *magnirostris*, var. *ruficauda*, Ridgw. Proc. Bost. Soc. N. H. xvi. pp. 25, 47, 49 [26].
Rupornis ruficauda, Nutting, Proc. U. S. Nat. Mus. v. p. 403 [27], vi. pp. 377 [28], 388 [29], 395 [30]; Zeledon, An. Mus. Nac. Costa Rica, 1887, no. 126 [31]; Ridgw. Proc. U. S. Nat. Mus. x. pp. 583 [32], 593 [33]; Stone, Proc. Ac. Phil. 1890, p. 204 [34]; Cherrie, Auk, 1892, p. 328 [35]; Richm. Pr. U. S. Nat. Mus. xvi. p. 521 [36]; Sharpe, Hand-l. Birds, i. p. 257 [37].
Buteo (*Rupornis*) *magnirostris*, var. *griseocauda*, Ridgw. Proc. Bost. Soc. N. H. xvi. pp. 25, 47, 48 [38].
Rupornis magnirostris, var. *griseocauda*, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 39 [39].
Asturina magnirostris, var. *griseocauda*, Sumichr. La Nat. v. p. 236 [40].
Rupornis ruficauda griseicauda, Ridgw. Proc. U. S. Nat. Mus. viii. p. 94 [41].
Rupornis magnirostris griseocauda, Ferrari-Perez, Proc. U. S. Nat. Mus. ix. p. 167 [42]; Richmond, op. cit. xviii. p. 628 [43].
Rupornis griseicauda, Sharpe, Hand-l. Birds, i. p. 258 [44].
Rupornis gracilis, Ridgw. Proc. U. S. Nat. Mus. viii. p. 94 [45]; Sharpe, Hand-l. Birds, i. p. 257 [46].
Rupornis magnirostris gracilis, Ridgw. Proc. U. S. Nat. Mus. viii. p. 578 [47].

Cinerascenti-brunneus, pileo clariore cinereo; alis dorso concoloribus; remigibus saturate ferrugineis, nigricanti-brunneo transfasciatis, primariis versus apicem nigricantibus; tectricibus supracaudalibus ochraceis, rufo vel brunnescenti-rufo transfasciatis; cauda sordide ferruginea, nigro 4-transfasciata, fascia subterminali paullo latiore, rectrice extima pallidiore, magis ochracea, nigro 10-fasciata; facie laterali cinerea; gutture et præpectore quoque cinereis; gula albicantiore, cinereo striatim notata, præpectore vix rufo adumbrato; pectore et corporis lateribus pallide ochrascentibus, rufo vel rufescenti-brunneo clare transfasciatis, abdomine minus frequenter fasciato, crisso et tectricibus subcaudalibus immaculatis; tibiis rufescentioribus, anguste rufo transfasciatis; tectricibus subalaribus pallide rufescenti-fulvis, axillaribus brunneo fasciatis, pectore concoloribus; rostro plumbeo, ad basin mandibulæ viridescente; cera et pedibus flavis; iride læte aurantiaco-rufa. Long. tota circa 14·5, culmen 1·1, alæ 8·8, caudæ 5·9, tarsi 2·5. (Descr. feminæ ex Lion Hill, Panama. Mus. nostr.)

♂. Feminæ similis et vix minor.

Juv. Adultis similis, sed brunnescentior, plumis singulis rufo marginatis; cauda ferruginea, plus minusve griseo adumbrata et nigro 5-fasciata: subtus fulvescens, fasciis sagittiformibus rufis notatus, sed ab adultis præpectore maculis brunneis longitudinalibus notato mox distinguendus. (Descr. fem. juv. ex San Juan, Costa Rica. Mus. nostr.)

Hab. Mexico (*Deppe & Schiede* [1 2]), Aldama, Tampico, Tamaulipas (*W. B. Richardson*), Altamira (*F. B. Armstrong* [43]), Tacolapa, State of Colima (*W. Lloyd*), Colipa, Vera Cruz (*F. D. G.*), Vega del Cazadero (*M. Trujillo*), Alvarado, Coatepec, Huatusco, Hacienda Tortugas, Plan del Rio, Rio Rancho Nuevo, Santana, San Lorenzo (*Ferrari-Perez*), Cordova (*Sallé* [3]), Jalapa (*De Oca* [5], *Ferrari-Perez* [42], *M. Trujillo*), city of Mexico (*White* [9]), Acapulco (*A. H. Markham* [21]), Tehuantepec (*W. B. Richardson*, *Sumichrast* [38 40]), Chihuitan, Almoloya, Santa Efigenia, Tonala, Chiapas (*Sumichrast* [39]), Rio Seco (*Bryant* [38]), Tuxtla, Chiapas (*W. B. Richardson*), Teapa, Tabasco (*H. H. Smith*), Campeche (*Ferrari-Perez*), Peto, Chable, Tabi, N. Yucatan (*G. F. Gaumer* [22]), Merida (*Schott* [13]), Izamal (*Witmer Stone & Baker* [34]), Cozumel I. (*U.S. S. 'Albatross' Exped.* [41 45 47], *De Vis* [23], *G. F. Gaumer* [24]), Islands of Meco, Holbox, and Bonacca (*G. F. Gaumer* [24 25]); British Honduras, Orange Walk (*G. F. Gaumer*); Guatemala [6], Santo Toribio, Peten (*O. S.*), Teleman, Polochic Valley (*Owen*), Chimalapa, Motagua Valley (*O. S.*), Savana Grande 3000 feet, Escuintla (*O. S. & F. D. G.*), Road from San Antonio to Paramos 6000 feet (*O. S.*), Sierra de las Minas (*W. B. Richardson*); Honduras, Omoa (*Leyland* [4]), San Pedro (*G. M. Whitely* [19]), Truxillo [32], Segovia River [33] (*Townsend*), Ruatan I. (*G. F. Gaumer* [24 25]); Salvador, La Libertad (*W. B. Richardson*); Nicaragua, San Juan del Sur [28], Sucuyá [29], Ometépe I. [30] (*Nutting*), San Emilio, Lake of Nicaragua, Volcan de Chinandega (*W. B. Richardson*), Rio Escondido (*C. W. Richmond* [36]); Costa Rica [14], Turrialba (*Carmiol* [12]), San José, San Mateo, Liberia (*Zeledon* [12 31 35]), La Palma, Gulf of Nicoya (*Nutting* [27]), San Lucas, Irazu, Alajuela, San Isidro, Santa Ana, Talamanca, Guayatil, Bebedero, Miravalles (*C. F. Underwood*); Panama, David (*Hicks* [10 11]), Chiriqui (*Kellett & Wood* [20]), Bugaba, Calovevora [18], Veragua [15] (*E. Arcé*), Lion Hill (*M'Leannan* [8]), Paraiso Station (*A. Hughes*), Turbo (*Wood* [7]), Pearl Islands (*Kellett & Wood* [20]).

Typical specimens of *Rupornis ruficauda* from Panama can be recognized at a glance

by their rufous tail-bands. On the other hand, Mexican examples have grey tail-bands, and appear at first sight to be distinct; hence Prof. Ridgway has separated the northern birds as *Rupornis griseicauda*, and those from Cozumel, which also have grey tails, as *R. gracilis*.

We cannot admit the specific distinctness of *R. ruficauda* and *R. griseicauda*, for in Costa Rica, Nicaragua, and Guatemala we find a perfect intergradation between these two forms, some specimens having rufous tails suffused with grey, while others have grey tails suffused with rufous. *R. gracilis* is a slightly smaller race of the Mexican *R. griseicauda*, but Cozumel birds are matched by others from Yucatan and Southern Mexico.

The measurements taken from our large series prove that no reliance can be placed on differences of dimension. As a rule, the sexes attain an equal length of wing. The males of *R. ruficauda* from various parts of Central America vary in this respect from 8·1 to 9·4 inches, while the females vary from 8·6 to 9·6 inches. The wing of the grey-tailed Mexican race measures from 8·8 to 9·8 inches in the male, and from 8·9 to 9·9 in the female; that of the Cozumel bird from 7·9 to 9·2 inches, while Bonacca specimens reach to 9·5 inches. Thus it will be seen that, although the smallest male bird we possess is from Cozumel, there are many others from the same island which equal the dimensions of those from the mainland, and as our series shows every possible gradation in size, we have not felt justified in separating them specifically.

Young birds are undoubtedly darker than the adults, and show less rufous on the wings. The tail-bands in immature specimens are six in number, whereas old birds have only four or five light ones.

As will be seen by the list of localities given above, there is scarcely a part of Central America in which *R. ruficauda* does not occur, and from the dates attached to our series of specimens it is apparently a resident throughout our region. In Mexico Sumichrast [40] states that it is found on both coasts, up to an elevation of 1200 metres, where it is abundant. Mr. Witmer Stone says that in Yucatan it was the commonest Hawk in the neighbourhood of Izamal [34].

In Guatemala it abounds in the hot coast-region, and is probably the most abundant of the Accipitres. We obtained specimens from the plains of Zacapa, the Pacific coast-region, the valley of the River Polochic, Choctum, in the forest-region of Vera Paz, and the district of Peten [16]. In Nicaragua *R. ruficauda* is abundant, according to Mr. Nutting [28], who also found examples in the Gulf of Nicoya, in Costa Rica, where it is the commonest Hawk of the country [27].

Although widely distributed, this species is not found in the high mountain districts, but it frequents the lowland plains up to an elevation of about 2500 feet. Its food in Guatemala consisted chiefly of snakes and lizards, though we have also found locusts and centipedes in its stomach [6 16]. In Costa Rica, Mr. Nutting says that it prefers open woods, although it also occurs in the thickest forests [28 29].

The nest and eggs have not been discovered.

URUBITINGA.

Urubitinga, Lesson, Rev. Zool. 1839, p. 132; Sharpe, Cat. Birds Brit. Mus. i. p. 212; Ridgway, Bull. U. S. Geol. & Geogr. Surv. ii. p. 167.

This genus is peculiar to the New World, and all its known species occur within our limits. It differs from *Buteo* and *Asturina* in habit and in plumage, the latter undergoing various phases in both the adult and young birds. The wings are remarkably rounded, and the primaries are scarcely longer than the secondaries. Prof. Ridgway regards *Urubitinga* as intermediate between the true Buzzards (*Buteo*) and the Harpies (*Thrasaetus* and *Morphnus*); in our opinion, however, the genus must be considered Buteonine in its affinities, though separable owing to its shorter wings and the unmistakable character of its plumage.

1. Urubitinga zonura.

Falco urubitinga, Gm. Syst. Nat. i. p. 265[1].

Urubitinga urubitinga, Sharpe, Hand-l. Birds, i. p. 258[2].

Falco zonurus, Shaw, Gen. Zool. vii. p. 62[3].

Urubitinga zonura, Lawr. Ann. Lyc. N. York, vii. p. 316[4]; Sharpe, Cat. Birds Brit. Mus. i. p. 213[5]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 168[6]; Gurney, List Diurn. Birds Prey, pp. 77, 148[7].

Nigra, pilei postici et nuchæ plumis ad basin albis; tectricibus caudæ superioribus externis albis: subtus nigra, tibiis albo maculatis; alis subtus nigris, fasciis indistinctis fuscis; subalaribus ad marginem alarum quoque albo maculatis; cauda nigra, albo terminata, fascia plus quam bitriente basali lata alba, ad basin nigro interrupta; rostro nigro; cera et pedibus flavis. Long. tota circa 24·0, alæ 16·0, caudæ 10·0, tarsi 4·7. (Descr. exempl. ex Nicoya, Costa Rica. Mus. nostr.)

Hab. Costa Rica, Bebedero (*E. Arcé*), Nicoya (*Mus. Norv.*[8]); Panama (*M'Leannan*[4]). —Colombia[7]; Ecuador[7]; Guiana[5]; Amazons[5]; Brazil[6]; Argentina[6]; Chile[7].

This species is widely distributed over South America, and only extends northwards as far as Costa Rica, whence we have examples as recorded above. In the latter country both *U. zonura* and *U. ridgwayi* are found. In Nicaragua *U. ridgwayi* apparently alone occurs, and Professor Ridgway, after a careful examination of all the specimens in the U. S. National Museum from that country, tells us he is of the same opinion.

U. zonura is distinguished by its white upper tail-coverts, and by the large expanse of white on the tail-feathers, this extending to the base, where it is slightly mottled with black; no second white bar is found in *U. ridgwayi*.

2. Urubitinga ridgwayi.

Morphnus urubitinga, Scl. P. Z. S. 1857, p. 227[1].

Urubitinga zonura (nec Shaw), Scl. & Salvin, Ibis, 1859, p. 215[2]; P. Z. S. 1867, p. 280[3]; Lawr. Ann. Lyc. N. York, ix. pp. 133[4], 207[5]; von Frantzius, J. f. Orn. 1869, p. 368[6]; Sharpe, Cat. Birds Brit. Mus. i. p. 213 (part.)[7]; Lawr. Mem. Bost. Soc. N. H. ii. p. 302[8]; Bull. U. S.

Nat. Mus. no. 4, p. 42[9]; Ridgw. Bull. U.S. Geol. & Geogr. Surv. ii. p. 168 (part.)[10]; Sumichr. La Nat. v. p. 236[11]; Nutting, Pr. U. S. Nat. Mus. v. p. 404[12]; vi. p. 388[13].

Urubitinga ridgwayi, Gurney, List Diurn. Birds Prey, pp. 77, 148[14]; Ridgw. Pr. U. S. Nat. Mus. x. p. 592[15]; Sharpe, Hand-l. Birds, i. p. 258 (1899)[16].

Urubitinga urubitinga ridgwayi, Zeled. An. Mus. Nac. Costa Rica, 1887, p. 126[17]; Cherrie, Auk, 1892, p. 328[18]; Richm. Pr. U. S. Nat. Mus. xvi. p. 521[19].

U. zonuræ similis, sed caudæ dimidio basali nigro, fascia angusta alba divisa; cera lorisque viridescenti-flavis; pedibus flavis; iride brunnea. Long. tota circa 24·0, alæ 16·2, caudæ 10·6, tarsi 5·0. (Descr. ad. ex Coban, Vera Paz. Mus. nostr.)

Juv. Fusca, dorso et alis nigricante fasciatis; capite, cervice et corpore subtus cervinis, nigro striatis; tibiis albis nigro fasciatis; cauda cervino-albida, fasciis irregularibus angustis fusco crebre transfasciata. (Descr. juv. ex Momotombo, Nicaragua. Mus. nostr.)

Hab. MEXICO, Presidio de Mazatlan (*Forrer*), Mazatlan (*Grayson*[8 10]), Colima (*Xantus*[10]), Mirador (*Sartorius*[10]), Orizaba[11], Cordova[11], Santa Efigenia, Barrio, Tehuantepec[9 10], Gineta Mountains[9], Tonala in Chiapas *[14] (*Sumichrast*), San Andres, Vera Cruz (*Boucard*[1], *Richardson*), Chablé, Buctzotz, N. Yucatan (*Gaumer*), Merida (*Schott*[8 10]); BRITISH HONDURAS, Cayo (*Blancaneaux*); GUATEMALA (*Skinner*[2]), Coban, San Gerónimo (*O. S.*), Savana Grande (*O. S. & F. D. G.*); HONDURAS, Segovia River (*Townsend*[15]); NICARAGUA, Realejo (*J. M. Dow*[10]), San Emilio, Lake of Nicaragua, Momotombo (*Richardson*), Sucuyá (*Nutting*[13]), San Carlos, Rio Escondido (*Wickham*[3], *Richmond*[19]); COSTA RICA (*Van Patten*[7]), San José (*Carmiol*[5 10], *Cherrie*[18], *Zeledon*[17]), Aguacate (*v. Frantzius*[6]), San Mateo (*Zeledon*[17]), Pozo Azul, Miravalles (*Underwood*), Gulf of Nicoya (*Nutting*[12]).

In *U. ridgwayi* the upper tail-coverts are white, as in *U. zonura*, but the marking on the tail is different. The white band across the centre of the latter is not so broad, and the base is black, crossed by a second narrow white bar. Young birds of the two species are scarcely distinguishable; the mesial marking on the feathers of the under surface are, however, somewhat larger in *U. ridgwayi*.

In Costa Rica the ranges of *U. zonura* and *U. ridgwayi* appear to coalesce.

Sumichrast[11] says that *U. ridgwayi* and *U. anthracina* have similar habits, both frequenting the borders of rivers and streams. In Mexico the latter inhabits the warm regions, but becomes rare in the more temperate country.

They sometimes ascend to a great height when on the wing, describing large circles and uttering a sharp cry, but on the ground they are easily approached.

The food consists of small quadrupeds, young birds, reptiles, fish, crustacea, and insects.

The nest is formed of small sticks, and is placed in the forks of the highest trees; one found by Sumichrast about April 15th contained young birds covered with white down.

* This must be, we think, the locality called "Sonata" by Gurney[14].

3. Urubitinga anthracina.

Falco anthracinus, Licht. Preis-Verz. Mex. Vög. p. 3 [1]; Cab. J. f. Orn. 1863, p. 58 [2].

Morphnus anthracinus, Scl. P. Z. S. 1857, pp. 211 [3], 227 [4].

Urubitinga anthracina, Scl. P. Z. S. 1858, p. 295 [5]; Moore, P. Z. S. 1859, p. 52 [6]; Scl. & Salv. Ibis, 1859, p. 216 [7]; 1860, p. 45 [8]; Owen, Ibis, 1861, p. 68 [9]; Lawr. Ann. Lyc. N. York, vii. p. 316 [10]; viii. p. 185 [11]; ix. p. 133 [12]; Scl. & Salv. P. Z. S. 1864, p. 369 [13]; 1867, p. 280 [14]; 1870, p. 838 [15]; Salv. P. Z. S. 1870, p. 215 [16]; Frantz. J. f. Orn. 1869, p. 368 [17]; Sharpe, Cat. Birds Brit. Mus. i. p. 215 [18]; Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 302 [19]; Bull. U. S. Nat. Mus. no. 4, p. 42 [20]; Sumichr. La Nat. v. p. 236 [21]; Salvin, Cat. Strickl. Coll. p. 488 [22]; Nutting, Pr. U. S. Nat. Mus. v. p. 404 [23]; vi. pp. 377 [24], 408 [25]; Boucard, P. Z. S. 1883, p. 456 [26]; Ridgw. Pr. U. S. Nat. Mus. viii. p. 581 [27]; Salvin, Ibis, 1885, p. 193 [28]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 167 [29]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [30]; Herrera, La Nat. (2) i. pp. 176, 320 [31]; Salvin, Ibis, 1889, p. 375 [32]; 1890, p. 89 [33]; Cherrie, Auk, 1892, p. 328 [34]; Richm. Pr. U. S. Nat. Mus. xvi. p. 521 [35]; Jouy, t. c. p. 787 [36]; Allen, Bull. Amer. Mus. N. H. v. p. 34 [37]; Bendire, Life Hist. N. Amer. Birds, i. p. 248, t. 8. ff. 8, 9 [38]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 84 [39]; Richm. Pr. U. S. Nat. Mus. xviii. p. 628 [40]; Sharpe, Hand-l. Birds, i. p. 258 [41]; Salvad. Boll. Mus. Torino, xiv. no. 339, p. 11 [42].

Urubitinga mexicana, Cass. Pr. Acad. Philad. 1860, p. 133 [43].

Nigra, notæi plumis ad basin albis; tectricibus supracaudalibus nigris, leviter albo terminatis; subalaribus nigris, ad marginem alæ albo limbatis; remigibus ad basin albo irroratis; cauda nigra, albo terminata, fascia lata mediana alba; rostro nigro, cera et mandibulæ basi flavis; pedibus flavis. Long. tota circa 21·0, alæ 15·0, caudæ 8·7, tarsi 3·4. (Descr. feminæ ex La Libertad, Salvador. Mus. nostr.)

Juv. Fusca, supra cervino et rufo variegata; capite, cervice et corpore subtus cervinis, fusco striatis; tibiis cervinis, fusco fasciatis; cauda nigra, albo terminata, et fasciis irregularibus 4 aut 5 albis transfasciatis; alis subtus nigris, ad basin albo fasciatis; subalaribus cervinis, nigro maculatis.

Hab. North America, Lower Rio Grande Valley and Arizona [38].—Mexico (*Deppe & Schiede* [1 2]), San Diego, Sonora (*Robinette* [37]), Rio de Monterey, Nuevo Leon, Sierra Madre (*Armstrong*), Altamira [40] (*Armstrong*), Sierra Madre above Ciudad Victoria, Tamaulipas, Tampico, Valles, San Luis Potosi, Bolaños, Jalisco (*Richardson*), Valley of Mexico (*Herrera* [31]), Mazatlan (*Grayson* [19]), Presidio de Mazatlan (*Forrer*), San Blas (*Grayson* [19]), Hacienda El Molina (*Jouy* [36]), Mirador, Cordova, Santa Efigenia, Tehuantepec [21], Tapana [20], Tonala, Chiapas [21] (*Sumichrast*), Vera Cruz, San Andres Tuxtla [4], La Parada, Oaxaca [5] (*Boucard*), La Antigua, Vega del Cazadero (*M. Trujillo*), Orizaba (*Botteri* [3], *Sumichrast* [21], *Ferrari-Perez*), Chietla, Puebla, Jalapa (*Ferrari-Perez* [29]), Yucatan, Chablé, Merida, Espita (*Gaumer* [26]), Cozumel Island (*De Vis* [28], *Gaumer* [32 33], *Voy. U.S. S. 'Albatross'* [27]); Guatemala (*Constancia* [22], *Skinner* [7]), Vera Paz (*O. S.*), Dueñas [8] (*O. S. & F. D. G.*), Chiapam (*O. S.*), San Gerónimo (*O. S.*, *Owen* [9]); Honduras, San Pedro (*Whitely* [15]), Omoa (*Leyland* [6]); Salvador, La Libertad (*Richardson*); Nicaragua, San Juan del Norte (Greytown) (*Holland* [11]), Matagalpa, San Emilio, Lake of Nicaragua, San Rafael del Norte (*Richardson*), San Juan del Sur [24], Los Sabalos (*Nutting* [25]), Rio Escondido, San Carlos (*Wickham* [14], *Richmond* [35]); Costa Rica [17], Punta

Arenas (*O. S.*[7]), San José (*v. Frantzius*[12], *Cherrie*[34]), Angostura (*Carmiol*[12]), Jiménez, Pozo Azul de Pirriz, Talamanca (*Zeledon*[30]), Miravalles (*Underwood*), La Palma, Gulf of Nicoya (*Nutting*[23]), Mirabayes, Nicoya (*E. Arcé*); Panama (*M'Leannan*[10 13]), Chitra, Bugaba[16], Chepo (*E. Arcé*), Punta de Sabana, Forests near Laguna de Pita (*Festa*[42]).—Colombia[43]; Venezuela; Antilles, St. Vincent, St. Lucia.

The Black Buzzard-Hawk is a summer visitor to the Southern United States, nesting in Arizona and Texas. It is widely distributed throughout Mexico, and probably breeds there, as it does in Guatemala, where Owen procured the eggs[9].

Grayson says that *U. anthracina* frequents the esteros and watercourses in the hot regions[19], and Sumichrast found it at an elevation of 1000 metres above the sea-level[21]. Its food consists chiefly of land-crabs, reptiles, and fish. Captain Bendire records having found a nest about thirty feet from the ground, composed of large sticks much decayed beneath, and lined several inches deep with leaves of the cotton-tree. The eggs are usually one or two in number, of a pale greenish-white, marked with small irregular spots and lines varying in colour from light to dark brown.

It is said to be very shy during the breeding-season, but much tamer in its winter haunts.

LEUCOPTERNIS.

Leucopternis, Kaup, Isis, 1847, p. 210; Salvin, Ibis, 1872, p. 241.
Urubitinga, partim, Sharpe, Cat. Birds Brit. Mus. i. p. 212.

The structural differences between the present genus and *Urubitinga* are very slight, and Dr. Sharpe united them in the 'Catalogue of Birds.' The chief characters in *Leucopternis* consist in the somewhat shorter tarso-metatarsus and the proportionately longer toes, while a more important feature is the similarity of the plumage in both the adult and young birds, whereas in *Urubitinga* the difference in this respect is strikingly accentuated.

Of the ten species of *Leucopternis* known, four are inhabitants of Central America, *L. ghiesbreghti* and *L. princeps* being confined to that region.

1. Leucopternis ghiesbreghti.

Buteo ghiesbreghti, DuBus, Esq. Orn. t. 1[1]; Scl. P. Z. S. 1857, p. 227[2]; Scl. & Salv. Ibis, 1859, p. 217[3]; Lawr. Ann. Lyc. N. Y. vii. p. 288[4]; Salv. P. Z. S. 1867, p. 158[5].
Pœcilopternis ghiesbrechti, v. Frantz. J. f. Orn. 1869, p. 368[6].
Leucopternis ghiesbreghti, Scl. & Salv. Ex. Orn. p. 121[7]; Salv. P. Z. S. 1870, p. 215[8]; Ibis, 1872, p. 323[9]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 174[10]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126[11]; Ridgw. Pr. U. S. Nat. Mus. x. p. 592[12]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 521[13]; Sharpe, Hand-l. Birds, i. p. 259[14].
Urubitinga ghiesbreghti, Sharpe, Cat. Birds Brit. Mus. i. p. 217[15]; Boucard, P. Z. S. 1878, p. 44[16]; Sumichrast, La Nat. v. p. 236[17].

Alba, loris, remigibus ad apicem et fascia caudæ subterminali nigris; rostro nigro, cera plumbea, pedibus flavis. Long. tota circa 20·0, alæ 14·5, caudæ 9·0, tarsi 3·3. (Descr. maris ex Choctum, Guatemala. Mus. nostr.)

♀ mari similis.

Juv. capite summo et cervice postica nigro striatis, alis extus nigro variegatis; secundariis plerumque nigris albo terminatis, subtus medialiter griseis nigro transfasciatis.

Hab. Mexico, Mirador (*Ghiesbreght* [1], *Sumichrast* [17], *Sartorius* [10]), Huatusco, Uvero (*Sumichrast* [17]), San Andres Tuxtla (*Boucard* [2]), Playa Vicente (*Ghiesbreght* [1]), Atoyac in Vera Cruz (*Mrs. H. H. Smith*), Chimalapa, Tehuantepec (*Richardson*); British Honduras, Cayo (*Blancaneaux*); Guatemala, Choctum, Medio Monte, Savana Grande, Aguna (*O. S. & F. D. G.*); Honduras (*Mus. Brit.*), Segovia River (*Townsend* [12]); Nicaragua, Matagalpa, Rio Grande, San Emilio, Lake Nicaragua (*Richardson*), Chontales (*Belt* [9]), Rio Escondido (*Richmond* [13]); Costa Rica (*Carmiol*), Candelaria Mts. (*v. Frantzius* [6]), Naranjo (*Boucard* [16]), Reventazon, Carillo (*Underwood*), Jiménez (*Zeledon* [11], *Underwood*); Panama, Bugaba [8], Calovevora [8], Chitra [8], Cordillera de Tolé [5] (*E. Arcé*), Lion Hill (*M'Leannan* [4 10]).

This beautiful bird is found in Southern Mexico, but throughout its range it is nowhere common. According to Sumichrast [17] it is most frequently seen in the woods of the temperate and hot districts of Vera Cruz, but he does not record it from the Pacific coast. In Honduras Mr. Townsend procured a single specimen on the Segovia River in June [12], and we have also an example obtained in British Honduras by M. Blancaneaux from the high wooded land about fifteen miles south of Cayo. When Sclater and Salvin [3] wrote their paper on the "Ornithology of Central America," in 1859, the only known Guatemalan localities for this species were in the Pacific coast-region; since then we have found it at Choctum in Alta Vera Paz, on the Atlantic slope. On the Escondido River in Nicaragua Mr. Richmond procured a single specimen [13], and M. Boucard obtained but one example at Naranjo in April [14].

Of its habits nothing has been recorded.

2. **Leucopternis princeps.**

Leucopternis princeps, Scl. P. Z. S. 1865, p. 429, t. 24 [1]; v. Frantz. J. f. Orn. 1869, p. 368 [2]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 178 [3]; Pr. U. S. Nat. Mus. vi. p. 415 [4]; Sharpe, Hand-l. Birds, i. p. 259 [5].

Urubitinga princeps, Sharpe, Cat. Birds Brit. Mus. i. p. 220 [6].

Supra saturate schistacea, plumis omnibus leviter limbatis, ad basin maculis celatis albis notatis: subtus usque ad pectus schistacea, corpore toto reliquo et tibiis albo et schistaceo regulariter transvittatis; subalaribus albis, schistaceo stricte fasciatis; remigibus subtus griseis, leviter schistaceo transfasciatis ad basin variegatis; cauda nigricante, fascia angusta mediana alba; rostro corneo, cera et pedibus flavis. Long. tota circa 22·0, alæ 14·5, caudæ 8·0, tarsi 3·4. (Descr. exempl. typ. ex Tucurriqui, Costa Rica. Mus. nostr.)

Hab. Costa Rica (*v. Frantzius* [2], *Van Patten* [4], *Endres*), Tucurriqui (*Arcé* [1]).

Of this magnificent species very little is known. In 1865 a collection arrived from Arcé from Costa Rica, containing a specimen which was described by Dr. Sclater [1]. Since that time we have met with but one example, procured by Endres, and now in our collection. The U. S. National Museum possesses a third, obtained from Van Patten.

L. princeps is one of the rarest of the Birds of Prey, and nothing is known respecting its habits or economy.

3. Leucopternis plumbea.

Leucopternis plumbea, Salvin, Ibis, 1872, p. 240, t. 8 [1]; Sharpe, Hand-l. Birds, i. p. 258 [2].

Urubitinga plumbea, Sharpe, Cat. Birds Brit. Mus. i. p. 216 [3]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 172 [4].

Plumbea, alis et cauda nigricantibus, hac fascia mediana alba, illis subtus albis; remigibus ad apicem leviter fasciatis; tibiis albido leviter sed crebre fasciatis; rostro nigro, cera, mandibulæ basi et pedibus flavis. Long. tota circa 14·0, alæ 9·0, caudæ 5·5, tarsi 2·7. (Descr. exempl. ex Veraguas, Panama. Mus. nostr.)

Hab. Panama [2], Veraguas (*Arcé*).—Ecuador [1].

L. plumbea, which shows in its sombre style of coloration a resemblance to a *Urubitinga*, was originally described by us from a specimen sent to Mr. Higgins from Ecuador, probably from one of the valleys of the Andes in the vicinity of Quito. We afterwards received an example from Sarayacu, from Buckley. The British Museum has another from Panama, and Arcé sent us a fourth from Veraguas. Nothing is known of its habits.

4. Leucopternis semiplumbea.

Leucopternis semiplumbea, Lawr. Ann. Lyc. N. Y. vii. p. 288 [1]; ix. p. 133 [2]; Scl. & Salv. Ex. Orn. p. 121, t. 61 [3]; v. Frantz. J. f. Orn. 1869, p. 368 [4]; Salv. Ibis, 1872, p. 243 [5]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 178 [6]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [7]; Ridgw. Pr. U. S. Nat. Mus. x. p. 592 [8]; Sharpe, Hand-l. Birds, i. p. 259 [9]; Salvad. Boll. Mus. Torino, xiv. no. 339, p. 10 [10].

Urubitinga semiplumbea, Sharpe, Cat. Birds Brit. Mus. i. p. 220 [11].

Supra schistacea unicolor, plumis ad basin albis: subtus alba, striis paucis rhachidalibus ad pectus nigris; alis subtus albis, remigibus ad apicem plumbeo-griseo leviter fasciatis; cauda nigricante, fascia mediana alba, subtus fascia ad basin notata; rostro nigro, cera aurantiaca, mandibulæ basi et pedibus aurantiaco-flavis, iride flava. Long. tota circa 13·5, alæ 7·3, caudæ 5·2, tarsi 2·5. (Descr. exempl. ex Veraguas, Panama. Mus. nostr.)

Juv. Fuscescentior, subtus cervino vix tincta, remigibus subtus ad apicem magis distincte fasciatis; cauda fasciis duabus albis brunnescente tinctis transvittata.

Hab. Honduras, Segovia R. (*Townsend* [8]); Costa Rica (*v. Frantzius* [4]), Valza (*Carmiol*), Talamanca (*Zeledon* [7], *Gabb* [6]); Panama (*M'Leannan* [1]), Veraguas (*Arcé*), Forests near the Laguna de Pita, Punta de Sabana (*Festa* [10]).—Colombia.

L. semiplumbea was originally described from the Isthmus of Panama, and we have since received two examples from Veraguas. It is, however, apparently more plentiful in Costa Rica, as the U. S. National Museum possesses nine specimens from that country, collected by Carmiol and Professor Gabb [6]. Mr. Townsend also met with the species on the Segovia River in Honduras [8], and we have two examples in our collection, procured at Remedios in the province of Antioquia, in Colombia, by Salmon. These latter appear to be an adult male and female, but as they have two white bands across the tail, and one of Arcé's skins from Veraguas also shows this character, we imagine that they are less mature than others in our series; should this be the case, there is but little difference in plumage between the young and old birds. The Colombian specimens, however, have the wings rather more distinctly barred, the head and mantle more streaked with white, and the blackish streaks on the throat more distinct.

Salmon records that the iris is yellow and that the food consists of insects.

BUSARELLUS.

Busarellus, Lafresnaye, in d'Orb. Dict. d'Hist. Nat. ii. p. 785 (1842); Sharpe, Cat. Birds Brit. Mus. i. p. 210; Ridgway, Bull. U. S. Geol. Surv. ii. p. 142.

This genus has a very different plumage from that of the ordinary Buzzards, and it is, moreover, remarkable for having spicules on the soles of the feet, like those of the Ospreys and Fishing-Owls of the genera *Ketupa* and *Scotopelia*. Like these, the single species of *Busarellus* seems to be piscivorous. Mr. Ridgway remarks that it "exhibits a striking analogy to *Pandion* in the very strong and slightly graduated claws, the close feathering of the tibiæ, the general form of the bill, and the sharp spicules of the toe-pads. It differs very markedly from *Pandion*, however, in the deep grooving of the claws, the soft texture of the plumage, the Buteonine scutellation of the tarsi and toes, and indeed in all essential features."

1. Busarellus nigricollis.

Black-necked Falcon, Lath. Gen. Syn., Suppl. i. p. 30 [1].

Falco nigricollis, Lath. Ind. Orn. i. p. 35 [2].

Buteo nigricollis, Vieill. N. Dict. d'Hist. N. iv. p. 473 [3]; Lawr. Mem. Bost. Soc. N. H. ii. p. 302 [4].

Buteogallus nigricollis, Scl. & Salv. Ibis, 1859, p. 216 [5]; Cass. Pr. Ac. Phil. 1860, p. 132 [6]; Scl. P. Z. S. 1860, p. 253 [7].

Busarellus nigricollis, Sharpe, Cat. Birds Brit. Mus. i. p. 211 [8]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 142 [9]; Sumichrast, La Nat. v. p. 236 [10]; Nutting, Pr. U. S. Nat. Mus. v. p. 404 [11]; vi. p. 395 [12]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [13]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 522 [14]; Sharpe, Hand-l. Birds, i. p. 258 [15]; Salvad. Boll. Mus. Torino, xiv. no. 339, p. 10 [16].

Supra castaneus, plumis omnibus stria rhachidali nigra notatis, capite toto lactescenti-albo, pileo postico et

nucha striatis: subtus plaga magna pectorali nigra, corpore toto reliquo castaneo; alis nigris, subalaribus minoribus et mediis castaneis, majoribus nigricantibus; cauda nigra, bitriente basali castanea nigro fasciata; rostro nigricante, pedibus flavidis. Long. tota circa 18·0, alæ 14·8, caudæ 7·0, tarsi 3·5. (Descr. exempl. ex Santana Mixtan, Guatemala. Mus. nostr.)

Juv. corpore supra irregulariter fusco fasciato; subtus abdomine antico cervino, nigro striato, postico castaneo et cervino variegato; tibiis cervinis, fusco fasciatis. (Descr. feminæ juv. ex Peten, Guatemala. Mus. nostr.)

Hab. Mexico, Mazatlan (*Grayson* [4]), Presidio de Mazatlan (*Forrer*), Los Ventorrillos near Tlacotalpam (*Sumichrast* [10]), Vera Cruz (*Sallé* [7]); Guatemala, Huamuchal (*O. S. & F. D. G.*), Santana Mixtan (*O. S.*[5]), Dueñas, Lake Peten (*O. S. & F. D. G.*); Nicaragua, Omotépe (*Nutting* [12]), Greytown (*Richmond* [14]); Costa Rica, La Palma (*Nutting* [11]), Las Trojas, Liberia (*Zeledon* [13]); Panama (*Arcé*), R. Truando (*Wood* [6], *Shott* [9]), Laguna de Pita (*Festa* [16]). — South America, Colombia, Guiana [15], Amazonia [8].

Essentially Neotropical in its distribution, *B. nigricollis* is found in localities suitable to its habits throughout our region, and in South America it extends to Guiana, Amazonia, and Brazil, as far south as the Rio Pilcomayo.

Judging from our specimens, its distribution is decidedly local, and Sumichrast found it of rare occurrence in the parts of Mexico which he explored. In Guatemala we observed it was not uncommon about the forest-swamps of the low district in the neighbourhood of Santana Mixtan. From the stomach of one shot in this locality we took the scales of a fish, which, together with the strong smell from the claws, left no doubt as to the nature of its food [5]. At La Palma, in the Gulf of Nicoya, Costa Rica, Mr. Nutting found it in the vicinity of the "Zapotal," a large freshwater lagoon; it was abundant and fearless [11]. The same observer states that it also inhabits the island of Omotépe, in Lake Nicaragua, seeming to prefer low swampy country.

Grayson writes that its flight is heavy, resembling that of the common Fish-Hawk, the wings being broad and the tail very short. The stomach of a bird he examined contained the recently devoured remains of fish, amongst them a species of perch found in the neighbouring lagoons and rivers.

Of the nest and eggs we have as yet no record.

HETEROSPIZIAS.

Heterospizias, Sharpe, Cat. Birds Brit. Mus. i. p. 160; Ridgw. Bull. U. S. Geol. Surv. ii. p. 139.

This is a form peculiar to the Neotropical Region, represented by a single species of wide distribution on the South-American continent, just reaching to Panama and thus entering our region. It resembles *Urubitinga*, but the wings are longer and more pointed, like those of the *Tachytriorchis*-section of the genus *Buteo*. The style of coloration is also quite peculiar, and there is no marked distinction between the plumage of the old and young birds.

1. Heterospizias meridionalis.

Rufous-headed Falcon, Lath. Gen. Syn., Suppl. p. 33 [1].
Falco meridionalis, Lath. Ind. Orn. i. p. 36 [2].
Heterospizias meridionalis, Sharpe, Cat. Birds Brit. Mus. i. p. 160 [3]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 139 [4]; Zeledon, An. Mus. Nac. Costa Rica, p. 126 [5]; Sharpe, Hand-l. Birds, i. p. 254 [6].
Circus rutilans, Swains. Phil. Mag. new ser. i. p. 366 [7].

Griseo-brunneus, pileo ferrugineo; collo postico ferrugineo, griseo transfasciato; tectricibus alarum minoribus et medianis ferrugineis; remigibus ferrugineis, late nigro terminatis; cauda nigra, albo terminata et fascia unica alba mediana transnotata: subtus ferrugineus, pectore et abdomine summo nigricanti-brunneo transfasciatis; tibiis, subcaudalibus et subalaribus ferrugineis, fere immaculatis. Long. tota circa 18·0, alæ 6·0, caudæ 7·5, culm. 1·4, tarsi 3·8. (Descr. exempl. ex Veraguas. Mus. nostr.)

Hab. Mexico (*Bullock* [8], *Mus. Brit.* [3]); Costa Rica (*Zeledon* [5]); Panama, Santa Fé (*E. Arcé*).—South America, Colombia [4], Ecuador [6], Guiana [6], Venezuela [3], Amazonia [3], Brazil [6], Bolivia [6], Argentina [4].

In 1827 Swainson recorded a specimen of *H. meridionalis* in Bullock's Museum, and in the British Museum is a second example, received from Mr. Hartweg [3], both said to be from Mexico. No recent collector has met with it there, and we regard these records as doubtful. Neither is the information exact as to the capture of this Hawk in Costa Rica, though it is included in Zeledon's list of the birds of that country [5].

The only positive evidence of the occurrence of this species within Central-American limits rests upon the two specimens which we received from Arcé.

HARPYHALIAETUS.

Harpyhaliaetus, Lafresnaye, Rev. Zool. 1842, p. 173; Sharpe, Cat. Birds Brit. Mus. i. p. 221.
Urubitornis, Verreaux, P. Z. S. 1856, p. 145.
Plangus, Sundev. Öfv. Vet.-Akad. Förh. 1874, p. 28; Sharpe, Bull. B. O. C. vi. p. xii.

In appearance the two species comprised in this genus closely resemble those of *Urubitinga,* especially in the rufous and black coloration of the young birds, which are very similar to those of *U. zonura* and its allies. In the crested head *Harpyhaliaetus* approaches the Harpies, and may be considered a link between them and the true Buzzards. The bill is like that of a large species of *Urubitinga,* and not so powerful or Eagle-like as that of the Harpy (*Thrasaetus*).

Two species of *Harpyhaliaetus* are recognized—a pale grey form with a longer crest, *H. coronatus,* inhabiting Patagonia, Bolivia, and Southern Brazil; while a darker one, *H. solitarius,* with a shorter crest, ranges from Chile to Colombia and Central America.

1. Harpyhaliaetus solitarius.

Circaetus solitarius, Tsch. in Wiegm. Arch. 1844, p. 264 [1]; Faun. Per., Vög. p. 94, t. 2 [2].
Urubitornis solitaria, Verr. P. Z. S. 1856, p. 145 [3]; Salv. P. Z. S. 1870, p. 214 [4].
Harpyhaliaetus solitarius, Gurney, Ibis, 1876, p. 490 [5].
Harpyhaliaetus coronatus, Sharpe, Cat. Birds Brit. Mus. i. p. 221 (partim) [6].

Saturate schistaceus unicolor, cristæ plumis ad basin albis, tectricibus supracaudalibus stricte albo terminatis, remigibus subtus ad basin griseo variegatis; cauda nigra albo terminata, fascia mediana et altera subtus ad basin albis; rostro corneo, cera, mandibulæ basi et pedibus flavis. Long. tota circa 23·0, alæ 20·0, caudæ 10·5, tarsi 4·3. (Descr. exempl. ex Chiguinda, Ecuador. Mus. nostr.)

Juv. Supra nigricanti-brunneus, cervicis plumis late cervino marginatis, superciliis cervinis: subtus brunneus, pectore et tibiis fere unicoloribus, gutture cervino-brunneo striato, abdomine quoque cervino, plumis omnibus medialiter brunneis; tectricibus subcaudalibus cervinis brunneo transfasciatis, remigibus nigricantibus ad basin cervino-albidis nigricante punctatis. (Descr. juv. ex Tehuantepec, Mexico. Mus. nostr.)

Hab. Mexico (*Mus. Norv.*[5]), Tehuantepec (*Sumichrast*); Guatemala, San Gerónimo (*fide Gurney*[5]); Panama, Calobre (*Arcé*[4]).—South America, Colombia[5], Venezuela, Ecuador, Peru[1 5], Chile[6].

This species is evidently rare in all parts of its range, and we have but few examples. Gurney records one in the Norwich Museum said to have come from South Mexico, and we possess an immature bird procured in Tehuantepec by Sumichrast. The former also mentions a specimen from San Gerónimo[5], though we never met with it in Guatemala. Arcé forwarded an immature example from Calobre in Veraguas[4], and its range extends from Colombia and Venezuela to Ecuador and apparently even to Chile. Its ally, *H. coronatus*, is said by d'Orbigny to frequent the banks of rivers and to resemble in habits the species of *Urubitinga*. In Patagonia it is stated that it eats skunks, a food which few animals will touch, and also armadillos, taking both into the air and letting them fall to the ground in order to kill them.

MORPHNUS.

Morphnus, Cuvier, Règne Anim. i. p. 318 (1817); Sharpe, Cat. Birds Brit. Mus. i. p. 222; Ridgw. Bull. U. S. Geol. Surv. ii. p. 146.

Compared with both *Harpyhaliaetus* and *Thrasaetus*, the members of the genus *Morphnus* are slender and graceful in form, having a very long tail, nearly equalling the wing. The crest is long and pendent, composed of narrow feathers fully four inches in length. Mr. Ridgway points out that the tarsus is more than twice the length of the middle toe, while the nostril is of peculiar shape, "broadly oval, obliquely vertical, with the anterior side gradually bevelled off to the edge of the cere." The wing is rounded, and the primaries scarcely exceed the secondaries in length.

Two species are known—*M. guianensis* inhabiting Amazonia, Guiana, and Colombia, just occurring within our limits, while *M. tæniatus* is known only from Ecuador.

1. **Morphnus guianensis.** (Tab. LXIII.)

Falco guianensis, Daud. Traité, ii. p. 78[1].

Morphnus guianensis, Cassin, Pr. Ac. Phil. 1860, p. 132[2]; v. Pelz. Orn. Bras. p. 4[3]; Scl. & Salv. P. Z. S. 1873, p. 302[4]: Sharpe, Cat. Birds Brit. Mus. i. p. 222[5]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 149; Sharpe, Hand-l. Birds, i. p. 259[7].

Ad. Supra nigricans, capite summo griseo; cristæ plumis elongatis nigro terminatis, alis extus griseo variegatis:

subtus albidus, pectore griseo, abdomine toto, tectricibus subcaudalibus et tibiis sparsim fusco transfasciatis; subalaribus albis; remigibus nigris, albo oblique transfasciatis; cauda nigra, albo terminata et supra griseo quadrifasciata; rostro nigro, pedibus flavis. Long. tota circa 30·0, alæ 17·0, caudæ 15·0, tarsi 4·7. (Descr. exempl. ex Lion Hill, Panama. Mus. nostr.)

Hab. Panama, Lion Hill (*M'Leannan*), R. Truando (*C. J. Wood* [2], *A. Schott* [6]).—South America from Colombia [7] to Guiana [7] and Amazonia [4].

M. guianensis is an inhabitant of the dense forests of the Amazon Valley, and we have examples in our collection from British Guiana and Colombia.

M'Leannan sent us a specimen from Panama, and Mr. C. J. Wood shot another on the Truando River in the same province. He writes:—"Only observed on one occasion on the Rio Truando, at the first camp after leaving the Atrato. I noticed this Eagle at first perched in a high tree, but after I had fired at a small bird, he immediately flew very rapidly and fiercely direct towards the spot where I was standing, as though he intended to pounce upon me. He approached to within a few feet, when I killed him with small shot." This, so far as we know, is the first recorded instance of the occurrence of the species in Central America.

THRASAETUS.

Harpyia, Vieillot, Anal. p. 24 (1816).

Thrasaetus, Gray, P. Z. S. 1837, p. 108; Sharpe, Cat. Birds Brit. Mus. i. p. 223; Ridgw. Bull. U. S. Geol. Surv. ii. p. 145.

Although amongst the fiercest and most powerful of Birds of Prey and resembling in appearance the true Eagles, the Harpy is, from the structure of its feet, a gigantic Buzzard, having the hinder part of the tarsus plated instead of reticulated. It is more heavily built than *Morphnus*; the tail, too, is shorter, being only about three-fourths the length of the wing. The foot is strong and massive; the tarsus comparatively short and Aquiline, less than twice the length of the middle toe. On the centre of the nape of the neck is a long crest of broad feathers, accompanied by a well-developed frill, which the bird elevates when enraged.

1. Thrasaetus harpyia.

Vultur harpyia, Linn. Syst. Nat. i. p. 121 [1].

Thrasaetus harpyia, Scl. & Salv. Ibis, 1859, p. 215 [2]; P. Z. S. 1864, p. 368 [3]; Lawr. Ann. Lyc. N. Y. vii. p. 461 [4]; Bull. U. S. Nat. Mus. no. 4, p. 39 [5]; v. Frantz. J. f. Orn. 1869, p. 368 [6]; Sharpe, Cat. Birds Brit. Mus. i. p. 224 [7]; Ridgw. Bull. U. S. Geol. Surv. ii. p. 145 [8]; Boucard, P. Z. S. 1878, p. 44 [9]; Sumichrast, La Nat. v. p. 236 [10]; Cherrie, Auk, 1892, p. 328 [11]; Bendire, Life Hist. N. Amer. Birds, i. p. 270 [12]; Sharpe, Hand-l. Birds, i. p. 259 [13].

Falco destructor, Daud. Traité, ii. p. 60 [14].

Harpyia destructor, Lawr. Ann. Lyc. N. Y. ix. p. 145 [15].

Falco imperialis, Shaw, Gen. Zool. vii. p. 52, t. 15 [16].

Harpyia imperialis, Sw. Phil. Mag. new ser. i. p. 366 [17].

Supra nigricans, tectricibus supracaudibus albo terminatis; capite toto et cervice schistaceis, plumis cristæ

Part CLXI.

elongatis et nigro terminatis: subtus gutture schistaceo, pectore nigro, abdomine toto albo; hypochondriis nigro maculatis, tibiis et tarsi parte proxima albis, nigro stricte fasciatis; alis subtus albis glauco variegatis, remigibus ad apicem nigris albo oblique transfasciatis; cauda nigra, albo terminata et griseo quadrifasciata; rostro nigro, pedibus flavis. Long. tota circa 33·0, alæ 24·0, caudæ 17·5, tarsi 4·8. (Descr. exempl. ex Lion Hill, Panama. Mus. nostr.)

Hab. NORTH AMERICA, Rio Grande Valley [12] ?—MEXICO (*Bullock* [17]), Almoloya [5], Tacubaya, Orizaba, Guichilona, Tehuantepec (*Sumichrast* [10]), Mirador (*U. S. Nat. Mus.* [8]); GUATEMALA, Vera Paz (*Skinner* [2]); COSTA RICA, San José (*Calleja* [15], *Cherrie* [11], *v. Frantzius*), Cartago, Turrialba (*v. Frantzius* [6]), Candelaria Mts. (*Boucard* [9]); PANAMA, Lion Hill (*M'Leannan* [3 4], *O. S.*[3]).—SOUTH AMERICA generally, from Colombia and Guiana to Paraguay [7].

The Harpy is widely distributed over the forest-regions of South America, and is not unfrequent in the southern districts of Central America, but becomes much scarcer towards the northern parts. Sumichrast [10] says that it is exceedingly rare in Mexico, where he does not consider the bird to be a native, and its occurrence north of the Rio Grande Valley is still a matter of conjecture.

In Guatemala Skinner states that *T. harpyia* is an inhabitant of Vera Paz, and exaggerated stories of its depredations are told by the Indians, but we ourselves never met with it. The species has been recorded from several districts of Costa Rica, and in the forests of Panama it is by no means uncommon. The late Mr. M'Leannan told us that scarcely a week passed without his seeing one or more, and we noticed a bird crossing the line of railway [3].

The flight of this great Eagle is slow and heavy, but it is admitted to be a desperate robber, and a note by Dr. Felix Oswald, quoted by the late Captain Bendire [12], says that the "*Lobo volante*, or Winged Wolf, as Quesada translates the old Aztec name of the Harpy, attacks and kills heavy old Turkey-cocks, young fawns, sloths, full-grown foxes and badgers, middle-sized pigs, and even the Sapayou Monkey (*Ateles paniscus* *), whose size and weight exceed its own more than three times."

The same observer describes the nest in the Oaxaca Mountains, and says that the eyrie is among the inaccessible trees and rocks of the foot-hills. At present, however, no authentic eggs of the Harpy appear to have been taken.

AQUILA.

Aquila, Brisson, Orn. i. p. 420 (1760), et auctt.; Sharpe, Cat. Birds Brit. Mus. i. p. 232.

The species of true *Aquila* number about ten or eleven, of which one only, *A. chrysaetus*, occurs in America and also in the Old World. The rest are distributed over Europe, Asia, and Africa.

The Eagles are amongst the largest of the Falconidæ, and are very powerful both as regards their feet and bill and also in their flight. In most of their characters they

* ?=*A. vellerosus*, Gray.

come nearer the Buzzards (*Buteo*) than to other members of the family, being, in fact, larger and stronger representatives of them, and connected in a measure by such intermediate forms as *Nisaetus*, *Spizaetus*, &c.

The tarsus is closely feathered to the base of the toes, and the tibiæ are furnished with long feathers; the toes are reticulate for the most part above, and the outer and middle ones are connected by a web at the base. The bill is very large and strong, the nostril oval and oblique, the superciliary bone prominent. Wings long and pointed, the third to the fifth quills the longest, the second to the sixth sinuate on the inner webs. Tail rounded. Feathers of the occiput and nape lanceolate.

1. **Aquila chrysaetus.**

Falco chrysaetus, Linn. Syst. Nat. i. p. 125 [1].

Aquila chrysaetus, Swains. Faun. Bor.-Am. Birds, p. 12 [2]; Coues, Birds N. W. p. 368 [3]; Sharpe, Cat. Birds Brit. Mus. i. p. 235 [4]; Bendire, Life Hist. N. Amer. Birds, i. p. 263, t. 9. figs. 3, 5 [5]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 93, t. 13 [6].

Falco canadensis, Gm. Syst. Nat. i. p. 256 [7].

Aquila canadensis, Cassin, in Baird's Birds N. Amer. p. 41 [8]; Dugès, La Nat. i. p. 138 [9].

Aquila sp., Swains. Phil. Mag. new ser. i. p. 366 [10].

Saturate fusca, nucha et cervice postica fulvis, humeris et campterio quoque fulvis, tarsis plumosis fuscis; caudæ bitriente basali pallide fusco variegata; rostro corneo, digitis flavis. Long. tota circa 34·0, alæ 25·0, caudæ 13·0, tarsi 4·0. (Descr. maris ad. ex Ciudad in Durango, Mexico. Mus. nostr.)

Hab. Northern portions of Northern Hemisphere and in mountainous regions further south.—Mexico (*Bullock* [10]), Ciudad in Durango (*Forrer*), Guanajuato (*Dugès* [9]).

It was probably to an Eagle of this species that Swainson referred in his paper on Bullock's Mexican birds published in 1827, but to which he did not give a specific name. Dugès includes *A. chrysaetus* in his list of Guanajuato birds, and its presence in the Cordillera between Durango and the Pacific Ocean is made certain by a fine specimen obtained and sent to us by Mr. A. Forrer on 20th October, 1881.

The bird is probably found, though perhaps sparingly, throughout the Sierra Madre of North-western Mexico, and is there at the extreme southern limit of its range.

In North America it has a very wide distribution over the mountainous portions of the temperate region, and is found in similar situations in the Old World.

At one time the western bird was sought to be separated under the name of *Aquila canadensis*, but no such distinction can, in our opinion, be maintained.

The habits of this well-known Eagle have been fully described in so many works that they need not be mentioned here.

SPIZAETUS.

Spizaetus, Vieillot, Anal. p. 24 (1816); Sharpe, Cat. Birds Brit. Mus. i. p. 259.

Of the ten species of *Spizaetus* included in the British Museum 'Catalogue' only

two occur in Tropical America, both of them being well-known in our region. Two of the remaining eight are found in Africa; the other six are Asiatic, and are spread from India and Ceylon to Borneo, Java, Celebes, and to Waigiou in the Moluccas.

1. **Spizaetus ornatus.**

Falco ornatus, Daud. Traité, ii. p. 77 [1].

Spizaetus ornatus, Scl. P. Z. S. 1857, p. 201 [2]; 1859, p. 389 [3]; Moore, P. Z. S. 1859, p. 52 [4]; Scl. & Salv. Ibis, 1859, p. 215 [5]; P. Z. S. 1864, p. 369 [6]; Salv. P. Z. S. 1867, p. 158 [7]; 1870, p. 215 [8]; Lawr. Ann. Lyc. N. Y. ix. p. 132 [9]; v. Frantz. J. f. Orn. 1869, p. 367 [10]; Nutting, Pr. U. S. Nat. Mus. v. p. 404 [11]; vi. p. 408 [12]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 167 [13]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [14]; Cherrie, Auk, 1892, p. 328 [15]; Underwood, Ibis, 1896, p. 446 [16].

Falco mauduyti, Daud. Traité, ii. p. 73 [17].

Spizaetus mauduyti, Sharpe, Cat. Birds Brit. Mus. i. p. 262 [18]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 38 [19]; Sumichrast, La Nat. v. p. 236 [20].

Supra niger, crista elongata, nigra, cervicis lateribus et cervice postica rufis; alis extus fuscis, nigro indistincte fasciatis, tectricibus minoribus albo maculatis: subtus albus, gutture striis nigris marginato, abdomine toto nigro transfasciato, tibiis et tarsis plumosis quoque fasciis angustioribus notatis; subalaribus albis, nigro guttatis; remigibus subtus griseo-albidis, nigro fasciatis; cauda nigra, fusco terminata et fasciis tribus fuscis ornata; rostro nigro, digitis flavis; cera lorisque viridi-flavis; iride aurantiaca. (Descr. maris ex Chimalapa, Tehuantepec, Mexico. Mus. nostr.)

♀ mari similis, sed major.

Juv. capite, cervice et corpore toto subtus lactescenti-albis; crista nigra; hypochondriis nigro maculatis; tibiis et tarsis plumosis albis, nigro fasciatis. (Descr. exempl. ex Choctum, Guatemala. Mus. nostr.)

Hab. Mexico, Jalapa (*Sallé* [2]), Mirador, Uvero (*Sumichrast* [19]), Actopam, Barra de Santa Ana (*Ferrari-Perez* [13]), Teotalcingo (*Boucard* [3]), Cacoprieto, Santa Efigenia [19 20] (*Sumichrast*), Chimalapa (*Richardson*); British Honduras, Belize (*Blancaneaux*); Guatemala, Coban (*Mus. Brit.* [18]), Cahabon (*Skinner* [5]), Choctum, Costa Grande (*O. S. & F. D. G.*); Honduras, Puerto Caballo (*Leyland* [4]); Nicaragua, Los Sábalos (*Nutting* [12]), San Emilio, Lake of Nicaragua (*Richardson*); Costa Rica, Miravalles (*Underwood* [16]), La Palma, Juan (*v. Frantzius* [10], *Zeledon* [9], *Nutting* [11]), Orosi (*v. Frantzius* [10]), San Isidro, San Vicente, Jiménez (*Underwood*), San José (*Carmiol* [9], *Zeledon* [14], *Cherrie* [15]); Panama, Cordillera de Tolé [7], Calovevora [8] (*E. Arcé*), Lion Hill (*M'Leannan* [6]).—South America, from Colombia to Guiana and Brazil [18].

This Crested Eagle is one of the most beautiful of Neotropical Birds of Prey, and is found throughout the whole of Central America. Sumichrast [19] says that it is common in the large forests of the eastern coast of Mexico, but occurs very rarely in the plains of the Pacific, where probably only isolated specimens are met with. In Guatemala we procured it at Choctum and in the Costa Grande, and many were sent by Skinner from the districts of Vera Paz. Leyland reports it as rare in Honduras, and it appears to be far less plentiful in Nicaragua than in Costa Rica, where it has been obtained

by many naturalists. *S. ornatus* is found in the "tierra caliente" of both coasts, seldom extending its range to a greater elevation than 3000 feet.

Sumichrast [19] describes the habits of this Eagle as being very like those of the Buzzards. He says that it never leaves the woods, awaits its prey perched, and lives principally upon rats and other small quadrupeds. Leyland procured only two specimens during his stay in Honduras; these he found in a very solitary place. The crop of one he examined was full, and contained small reptiles.

2. Spizaetus tyrannus.

Falco tyrannus, Wied, Reise n. Bras. i. p. 360 [1]; Temm. Pl. Col. 73 [2].

Spizaetus tyrannus, Scl. P. Z. S. 1858, p. 357 [3]; 1860, p. 253 [4]; Scl. & Salv. Ibis, 1859, p. 215 [5]; P. Z. S. 1864, p. 368 [6]; 1870, p. 838 [7]; Lawr. Ann. Lyc. N. Y. vii. p. 316 [8]; ix. p. 132 [9]; v. Frantz. J. f. Orn. 1869, p. 368 [10]; Salv. P. Z. S. 1870, p. 215 [11]; Sharpe, Cat. Birds Brit. Mus. i. p. 264 [12]; Sumichrast, La Nat. v. p. 236 [13].

Niger, pilei et cristæ plumis ad basin albis: subtus gutture albo striato, abdomine albo guttato; tibiis, tarsis plumosis et tectricibus subcaudalibus albo fasciatis; alis extus vix fusco fasciatis, subalaribus nigro et albo variegatis, remigibus subtus albo fasciatis; cauda nigra, fusco terminata et fusco quadrifasciata, fasciis subtus albicantioribus; rostro nigro, digitis flavis. Long. tota circa 25·0, alæ 15·0, caudæ 12·5, tarsi 3·0. (Descr. maris ex Savana Grande, Guatemala. Mus. nostr.)

♂ mari similis, sed major.

Juv. Fuscus, capite toto et cervice albicantibus, cristæ plumis nigro terminatis; tectricibus alarum, remigibus et secundariis albo terminatis: subtus gutture toto medialiter albo, lateribus et pectore fusco striatis, abdomine toto albo guttato; tibiis, tarsis et tectricibus subcaudalibus fusco fasciatis; cauda nigricante, albo terminata et fusco quinquefasciata. (Descr. juv. ex Dueñas, Guatemala. Mus. nostr.)

Hab. Mexico, Vera Cruz (*Sallé* [4]), Mirador, Potrero (*Sumichrast* [13]); Guatemala (*Skinner* [5]), Choctum, Savana Grande, Dueñas (*O. S. & F. D. G.*); Honduras (*Mus. Brit.*), Potrerillos (*Taylor* [3]), San Pedro (*Whitely* [7]); Salvador, Volcan de San Miguel (*Richardson*); Nicaragua, Mombacho (*Richardson*); Costa Rica (*v. Frantzius* [10]), Tucurriqui (*E. Arcé* [9]), San José (*Underwood*); Panama, Cordillera de Chucu, Calobre [11] (*E. Arcé*), Lion Hill (*M'Leannan* [6 8]).—South America, from Colombia to Guiana and Brazil [12].

Of this species there is little to be recorded, although the bird is by no means rare in collections. Its distribution in Central America is apparently the same as that of *S. ornatus*, and, similarly, it inhabits the forest-regions, ranging to no great elevation.

SPIZIASTUR.

Spizastur, Lesson, Rev. Zool. 1839, p. 132; G. R. Gray, List Gen. Birds, p. 3 (1841).
Spiziastur, Sharpe, Cat. Birds Brit. Mus. i. p. 258 (1874).

The single species of this genus is closely related to *Spizaetus*, but may be distinguished by the extremely powerful claws, the hind one being especially long and strong.

In size *Spiziastur* resembles some of the smaller Eagles of the Palæarctic genus

Nisaetus and, as with those birds, the tarsus is closely feathered to the base of the toes.

It is a purely Neotropical genus, ranging over the greater part of tropical South America and extending as far north as the Mexican State of Vera Cruz.

1. Spiziastur melanoleucus.

Buteo melanoleucus, Vieill. N. Dict. d'Hist. Nat. iv. p. 482 [1].

Spizaetus melanoleucus, Scl. & Salv. Ibis, 1859, p. 215 [2]; P. Z. S. 1864, p. 369 [3]; Lawr. Ann. Lyc. N. Y. ix. p. 132 [4]; Bull. U. S. Nat. Mus. no. 4, p. 38 [5]; v. Frantz. J. f. Orn. 1869, p. 368 [6]; Boucard, P. Z. S. 1883, p. 456 [7].

Spiziastur melanoleucus, Sharpe, Cat. Birds Brit. Mus. i. p. 258 [8]; Sumichrast, La Nat. v. p. 236 [9]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 167 [10]; Stone, Pr. Ac. Phil. 1890, p. 205 [11].

Supra niger, alis extus brunnescentioribus, capitis postici et cristæ plumis ad basin albis; pileo antico, cervicis lateribus et corpore toto subtus albis; loris nigris; subalaribus albis, remigibus subtus ad basin albis, ad apicem fuscis albo indistincte fasciatis; cauda nigra, apice albida fusco quadrifasciata; rostro nigro; cera, mandibulæ basi et digitis flavis. Long. tota circa 24·0, alæ 16·0, caudæ 10·0, tarsi 3·2. (Descr. maris ex Huamuchal, Guatemala. Mus. nostr.)

Hab. MEXICO, Jalapa (*Ferrari-Perez* [10]), Santa Efigenia [5 9], Uvero [9] (*Sumichrast*), Tizimin (*Alcala* [7]), near Tekanto and Sitilpech (*Stone & Baker* [11]); GUATEMALA (*Skinner* [2]), Huamuchal, Savana Grande (*O. S. & F. D. G.*); NICARAGUA, Matagalpa (*Richardson*); COSTA RICA, Tucurriqui (*E. Arcé*), La Palma (*Zeledon* [4]), Esparza, Pacuar, San José (*v. Frantzius* [6]); PANAMA, Veraguas (*E. Arcé*), Lion Hill (*M'Leannan* [3]).—SOUTH AMERICA to Guiana and E. Brazil [8].

This species is an inhabitant of the forest-regions of the lowlands of Central and South America, extending its range northwards as far as the middle of the State of Vera Cruz. It has been found in Yucatan, as well as on both the Atlantic and Pacific slopes of Central America, being everywhere a somewhat scarce bird. The only specimen we obtained in Guatemala was shot at Huamuchal, when we visited the freshwater fisheries of that district in the spring of 1863. The bird was resting on an upper branch of a high tree, in which it hung after it was shot, so that the tree had to be cut down before we could get it. Huamuchal is nearly at the sea-level, but the bird occurs at higher elevations, as an example was brought to us, during our stay at Dueñas, from Savana Grande, which is about 3000 feet above the sea.

Subfam. *MILVINÆ*.

Though the Kites do not form a very marked group, it is perhaps more convenient to recognize them as a subfamily. If the genera are dispersed amongst other subfamilies, as placed by Dr. Sharpe, they seem, in our opinion, to introduce a discordant element: thus, *Elanoides* and *Elanus* are much out of place in the Aquilinæ, following the Sea-

Eagles, while the feeble *Harpagus* and *Ictinia* are placed in the Falconinæ on account of their toothed bill. There are, however, some Old-World genera, not represented in the Neotropical region, which Dr. Sharpe has placed as intermediate forms between the Eagles and the Kites. As a whole, the Milvinæ are distributed over nearly the entire temperate and tropical portions of the world, but the only genus of such wide range is *Elanus*. The other seven genera of our region are purely American, and four of them are strictly Neotropical.

Dr. Coues defines the Milvinæ as follows:—"No ruff or ear-conch. Loral bristles moderate, scanty or quite wanting, the head being then closely and softly feathered to the bill. Superciliary shield evident or not. Bill usually weak, sometimes extremely slender, the cutting-edge of the maxilla straight to the curve, or lobed or festooned, not [usually] toothed, nor the mandible truncate and notched. Nostrils not circular, nor with central bony tubercle (except *Harpagus*). Wings very long, more or less narrowed and pointed, with several primaries emarginate on the inner webs. Tail very variable in length and shape, nearly even or deeply forked; feet very small; tarsus much shorter than the tibia, apparently equal to the middle toe without the claw, usually feathered above, the rest mostly or entirely reticulate in small pattern (with few or no large transverse scutellæ). The general organization is Buteonine; the septum nasi is incompletely ossified, and the anterior ridge of the palate is little developed, if at all; the superciliary shield is in one or two pieces."

ELANOIDES.

Elanoides, Vieill. N. Dict. d'Hist. Nat. xxiv. p. 101; Sharpe, Cat. Birds Brit. Mus. i. p. 317; Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. pp. 153, 180.

The large Swallow-tailed Kite, which is the sole representative of this genus, is easily distinguished from all the other American Birds of Prey by its long and deeply-forked tail. The nostrils are not swollen as in *Elanus* and some other Kites; they are oblique, without overhanging membrane; the tomium of the bill is without indentation. The wings are of great length, but are nearly equalled by the outer tail-feathers, a relative proportion not found in many Birds of Prey. Only two outer quills show any sinuation on their inner webs.

Dr. Shufeldt (Ibis, 1891, pp. 228–231) has given some notes on the osteology of the present genus, pointing out certain characteristics which it shares with the Ospreys.

1. Elanoides furcatus.

The Swallow-tailed Kite, Catesby, N. H. Carol. i. p. 4, t. 4[1].

Falco furcatus, Linn. Syst. Nat. i. p. 129[2].

Elanoides furcatus, Scl. & Salv. Ibis, 1859, p. 220[3]; Owen, Ibis, 1860, p. 240[4]; Salv. Ibis, 1861, p. 148[5]; P. Z. S. 1867, p. 158[6]; 1870, p. 216[7]; Lawr. Ann. Lyc. N. Y. vii.

p. 289[8]; ix. p. 134[9]; v. Frantz. J. f. Orn. 1869, p. 369[10]; Sharpe, Cat. Birds Brit. Mus. i. p. 317[11]; Boucard, P. Z. S. 1878, p. 45[12]; Sumichrast, La Nat. x. p. 237[13].

Nauclerus furcatus, Salv. Ibis, 1872, p. 323[14]; Gundl. Orn. Cub. p. 45[15].

Elanoides forficatus (Linn.), Ridgw. Pr. U. S. Nat. Mus. x. p. 592[16]; Herrera, La Nat. (2) pp. 175, 319[17]; Richm. Pr. U. S. Nat. Mus. xvi. p. 521[18]; Bendire, Life Hist N. Amer. Birds, i. p. 168, t. 5. figs. 1, 2[19]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 20, t. 1[20].

Capite toto, cervice, dorso postico et corpore subtus albis; tectricibus supracaudalibus plumbeo-nigris, ad basin albis; alis extus et cauda chalybeo-nigris, griseo vix tinctis; dorso et tectricibus alarum minoribus purpureo-nigro suffusis; humeris, subalaribus et axillaribus albis; rostro nigro, pedibus lactescenti-cyaneis. Long. tota circa 23·0, alæ 16·7, caudæ rectr. med. 5·5, rectr. lat. 13·5, tarsi 1·4. (Descr. exempl. ex Vera Paz, Guatemala. Mus. nostr.)

Hab. North America, Southern States, North Iowa, Minnesota, Illinois, Florida, Texas, and generally to the New England States[20].—Mexico, Valley of Mexico (*Herrera*[17]), Cacoprieto (*Sumichrast*[13]); British Honduras, Belize (*O. S.*); Guatemala, Vera Paz (*Sarg*), Tactic (*Owen*[4]), Kokak, Lanquin, Raxche, Vera Paz (*O. S.*[5]), Cahabon (*Skinner*[3]); Honduras, R. Segovia (*Townsend*[16]); Nicaragua, San Rafael del Norte (*Richardson*[18]), Chontales (*Belt*[14]), R. Escondido (*Richmond*[18]); Costa Rica, Birris (*Zeledon*[9]), Aguacate, Quebrada Honda, Cervantes[10] (*v. Frantzius*), Naranjo (*Boucard*[12]), San Miguel, Juan Vinas (*Underwood*); Panama, Cordillera de Tolé[6], Calovevora (*E. Arcé*[7]), Lion Hill (*M'Leannan*[8]).—South America, from Colombia and Guiana to South Brazil[11]; Cuba[15].

The Swallow-tailed Kite is a somewhat scarce visitor to North America, breeding in the Southern States, where a few individuals are believed to winter; it has even been observed as far north as Manitoba. According to Bendire, the species is distributed from Florida westward through the Gulf States, including the greater part of Texas. From Neotropical countries it has been described as a migrant, often seen in flocks of considerable size. Though not definitely known to breed in Central America, there is every probability that it does so, since a nest has been reported near Belize in British Honduras[3], and when collecting in Vera Paz in March 1861 we noticed several of these Kites soaring above us, and the natives stated that they nested in the patches of pine-trees which occur throughout the forest. Mr. Richmond observed a small number circling about on the Escondido River on the 15th of May[18], and Mr. Townsend noted one on the Segovia River in Honduras as late as the 15th of June[16]. In Brazil specimens were obtained by Natterer from September to March.

The food consists of reptiles, frogs, and beetles, grasshoppers, and other insects; Bendire doubts if it ever kills a bird.

A very interesting account of *E. furcatus* is given by Robert Owen in 'The Ibis' for 1860[4]. Journeying from Coban to San Gerónimo, in Guatemala, he came upon a flock of some three hundred flying in a cloud over a swarm of bees; they passed within four or five yards of the observers, thus enabling them to see the bees conveyed

to the Kite's mouth while the latter were in full flight. The native hunter expressed surprise at seeing so many of these birds together, as they are usually found near Coban in pairs, or at most in parties of three or four.

The nest is composed of twigs and moss, generally built in a tree at a great height. The eggs are ashy-white or cream-colour, beautifully spotted and blotched with brown and rufous; they are usually two in number, but occasionally three or four.

ELANUS.

Elanus, Savigny, Syst. Ois. d'Egypte, p. 274 (1809); Sharpe, Cat. Birds Brit. Mus. i. p. 336 (1874).

Although the genus *Elanus* is found in every temperate and subtropical region of the globe, only one of the five species known is American, and this inhabits the Southern United States, Central America, and the greater part of South America. The species are all similar in colour, being of a clear grey, with a black patch on the wing-coverts, whence the common name of "Black-shouldered Kites." They have a short rounded tail, the wings reaching to the tip, and the tarsus naked in front and covered with minute roundish scales, but differ from *Elanoides* in the claws not being grooved beneath (*cf.* Ridgway, Man. N. Am. Birds, 2nd edit. p. 222). The palate, according to Dr. Shufeldt (Ibis, 1891, p. 230), is unlike that of other Accipitrine birds, being non-desmognathous, "as its maxillo-palatines neither unite across the middle line nor come in contact either with the vomer or with the nasal septum."

1. Elanus leucurus.

Alcon blanco, Azara, Apunt. i. p. 165 [1].

Milvus leucurus, Vieill. N. Dict. d'Hist. Nat. xx. p. 563 [2].

Elanus leucurus, Cassin, Birds Calif. & Texas, p. 106 [3]; Scl. P. Z. S. 1857, p. 201 [4]; Scl. & Salv. Ibis, 1859, p. 220 [5]; Sharpe, Cat. Birds Brit. Mus. i. p. 339 [6]; Sumichrast, La Nat. v. p. 237 [7]; Bendire, Life Hist. N. Amer. Birds, p. 173, pl. v. ff. 3, 4 [8]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 23 [9]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 126 [10].

Supra griseus, fronte et corpore toto subtus albis; tectricibus alarum minoribus et mediis nigris; subalaribus albis, plaga magna nigra; cauda medialiter pallide grisea; rectricibus lateralibus albis: rostro nigro, cera et pedibus flavis. Long. tota circa 14·5, alæ 12·0, caudæ 7·0, tarsi 1·3. (Descr. exempl. ex Orizaba, Mexico. Mus. nostr.)

Juv. Supra brunneus, plumis rufo vel albido marginatis; rectricibus subterminaliter schistaceo nigro transfasciatis: subtus albus, rufo lavatus et fusco striatus. (Descr. exempl. ex Buenos Ayres. Mus. Brit.)

Hab. NORTH AMERICA, Southern United States from South Carolina and Southern Illinois to Texas and California [10].—MEXICO, Jalapa (*Sallé* [4]), Orizaba (*Sumichrast* [7], *F. D. G.*), Mirador (*Sumichrast* [7]); GUATEMALA (*Skinner* [5]).—SOUTH AMERICA generally, from Venezuela and Guiana to Patagonia and Chile [6].

The breeding-range of this Kite, so far as is known, is confined to South Carolina, Florida, the Indian Territory, Texas, and the southern portions of California; though

nowhere common, it is said to occur also in Georgia, Alabama, Louisiana, and Southern Illinois, but it has not yet been recorded from Arizona or New Mexico [9].

Although a regular migrant throughout Central America, very little concerning this species has been recorded from within our limits. It was procured by Sallé in Jalapa, by Sumichrast at Mirador and Orizaba, and by Skinner in Guatemala, but did not come under our notice in that country.

E. leucurus, like its relative the Swallow-tailed Kite, preys only upon small snakes, lizards and frogs, and grasshoppers and other insects. Its flight is graceful, resembling that of a Gull.

The nest is placed in a tree, at a height of thirty or forty feet from the ground; it is composed of stout sticks and lined with cotton-wood bark or straw. The eggs, varying from three to five in number, are so thickly marked with red blotches that the creamy-white ground-colour is often obscured.

GAMPSONYX.

Gampsonyx, Vigors, Zool. Journ. ii. p. 69 (1825); Sharpe, Cat. Birds Brit. Mus. i. p. 340; Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 150.

This genus contains but one species, which resembles a diminutive *Elanus*, though more strikingly coloured. Mr. Ridgway says the tail is more than two-thirds the length of the wing, whereas in *Elanus* it is less; and in *Gampsonyx* the scales of the feet are larger, and the transverse scutellæ of the toes extend nearly to their base. It is probably only a rare visitor to the Southern States of Central America, but in South America it extends over a large area.

1. Gampsonyx swainsoni.

Gampsonyx swainsoni, Vigors, Zool. Journ. ii. p. 69 [1]; Gray, Gen. Birds, i. p. 26, t. 9. f. 4 [2]; Sharpe, Cat. Birds Brit. Mus. i. p. 340 [3].

Supra plumbea, scapularibus ad basin albis, secundariis albo terminatis; torque cervicali rufa; fronte et genis albis, flavo tinctis; corpore subtus albo, hypochondriis et tibiis rufis; alis subtus albis; cauda plumbea, rectrice extima utrinque albo marginata, rectrice proxima in pogonio interno tantum albo limbata: rostro nigro, pedibus carneis. Long. tota circa 9·0, alæ 6·4, caudæ 3·9, tarsi 1·1. (Descr. maris ex Leon, Nicaragua. Mus. nostr.)

♀ mari similis, sed paulo major.

Hab. NICARAGUA, Leon (*Richardson*).—SOUTH AMERICA generally, from Colombia and Guiana to South Brazil [3].

Although a bird of wide distribution in South America, with the exception of the pair obtained by Mr. Richardson at Leon in Nicaragua on December 15th, 1892, we have no record of its occurrence within our limits.

ROSTRHAMUS.

Rostrhamus, Lesson, Traité d'Orn. p. 55 (1831).
Rosthramus, Sharpe, Cat. Birds Brit. Mus. i. p. 327.

This genus is easily recognized by its remarkably hooked and slender bill, and by having the upper mandible so curved downward that it far exceeds the lower one in length. The feet are small, the claws slender and nearly straight, and grooved beneath, the front of the tarsus covered with large transverse scutellæ.

It is doubtful whether more than two species of *Rostrhamus* really exist, viz.: *R. sociabilis*, with white upper tail-coverts, and *R. hamatus*, with these tail-coverts grey, like the back. *R. tæniatus* was described from a single specimen having three white bars on the tail.

1. Rostrhamus sociabilis.

Gavilan del estero sociable, Azara, Apunt. i. p. 84 [1].
Herpetotheres sociabilis, Vieill. N. Dict. d'Hist. N. xviii. p. 318 [2].
Rostrhamus sociabilis, Moore, P. Z. S. 1859, p. 52 [3]; Scl. & Salv. Ibis, 1859, p. 219 [4]; Lawr. Ann. Lyc. N. Y. ix. p. 134 [5]; v. Frantz. J. f. Orn. 1869, p. 369 [6]; Sumichrast, La Nat. v. p. 237 [7]; Nutting, Pr. U. S. Nat. Mus. vi. pp. 395 [8], 408 [9]; Bendire, Life Hist. N. Amer. Birds, i. p. 180, t. 5. ff. 6, 7 [10]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 25 [11].
Cymindis leucopygus, Spix, Av. Bras. i. p. 7, t. 2 [12].
Rosthramus leucopygus, Sharpe, Cat. Birds Brit. Mus. i. p. 328 [13].

Schistaceo-niger, capite toto et remigibus saturatioribus, tectricibus supracaudalibus longioribus albis; subcaudalibus albis; cauda nigricante, ad basin alba et sordide albo terminata: rostro nigro, cera, loris et pedibus flavis. Long. tota circa 16·0, alæ 14·0, caudæ 8·0, tarsi 2·0. (Descr. maris ex De Soto County, Florida. Mus. nostr.)

♀. Brunneus, pileo vix nigricantiore; cauda ut in mari colorata, sed brunnescentiore: subtus saturate brunneus, gutture pallide ochraceo vel albo, brunneo sagittatim striato; pectoris plumis ochraceo indentatis vel maculatis; crisso et subcaudalibus albis; remigibus intus griseis, versus basin albicantibus et fusco anguste transfasciatis. (Descr. fem. ex Panacofkee Lake, Florida. Mus. Brit.)

Forma melan. Similis præcedentibus, sed niger.

Juv. Fuscus, plumis omnibus rufo marginatis: subtus rufescenti-albo variegatus, subalaribus albidis; cauda griseo-fusca, ad basin albida, fascia lata subterminali fusca.

Hab. North America, Florida [10 11].—Mexico, San Andres Tuxtla, Cosamaloapam (*Sumichrast* [7]); Guatemala, Peten (*Leyland* [4]); Nicaragua, Omotépe [8], Los Sábalos (*Nutting* [9]); Costa Rica (*v. Frantzius* [6]).—South America generally, from Colombia and Guiana to Paraguay [13].

The Everglade Kite, as it is called by North-American naturalists, nests regularly in Southern Florida, and is common in certain districts of that State, subsisting on small molluscs and frequenting marshy localities. Sumichrast procured specimens in Mexico in the State of Vera Cruz, and the species has also been obtained in Guatemala, Nicaragua, and Costa Rica, but it is not recorded as breeding there. Apparently only a migrant throughout Central America, where the bird is always found in the vicinity of

water. Salvin noticed an immense flight of these Hawks migrating in a north-westerly direction along the Pacific coast-region of Guatemala, in March 1858, where it is well known to the Spaniards under the name of the "Asacuani"; and the term has become proverbial for a person constantly wandering from place to place [4]. Leyland obtained a specimen near the Lake of Peten. The food consists almost entirely of univalve molluscs. Dr. A. K. Fisher [11] says that in Florida the species on which it subsists (*Ampullaria depressa*) is two or three inches in diameter. Having captured one, it perches and removes the animal without injuring the shell; five or six are thus secured before the bird, retaining them in the gullet, returns to feed its young.

In South America, Mr. Hudson says, *R. sociabilis* arrives in Buenos Ayres in September, where it breeds in flocks. The nest is described by Bendire [10] as carelessly constructed, the base consisting of dry willow-branches some half an inch in diameter, the cavity being seven inches wide by one and a half deep, and lined with small vine-stems and willow-twigs.

The eggs, numbering two or three, are laid between the latter part of February and the early part of May. They are pale greenish-white, with brownish-red blotches sometimes entirely concealing the ground-colour.

LEPTODON.

Cymindis, Cuvier, Règn. An. i. p. 319 (1817) (nec Latr.).
Leptodon, Sundevall, K. Vet.-Ak. Handl. 1835, p. 114; Sharpe, Cat. Birds Brit. Mus. i. p. 329; Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 153.

The genus *Leptodon* contains but two species—one, *L. cayennensis*, being widely distributed throughout South and Central America; the other probably confined to Eastern Brazil. It is placed by Dr. Sharpe at the end of his subfamily Aquilinæ, among the Kites which have a rounded tail. The bare face is also a peculiarity; and Mr. Ridgway further points out that the mandible is distinctly toothed, a character which distinguishes *Leptodon* from *Regerhinus*.

1. Leptodon cayennensis.

Cayenne Osprey, Lath. Gen. Syn. i. p. 47 [1].
Falco cayennensis, Gm. Syst. Nat. i. p. 263 [2]; Temm. Pl. Col. 270 [3].
Cymindis cayennensis, Moore, P. Z. S. 1859, p. 52 [4]; Scl. & Salv. Ibis, 1859, p. 219 [5]; Lawr. Ann. Lyc. N. Y. vii. p. 317 [6]; Bull. U. S. Nat. Mus. no. 4, p. 42 [7]; v. Frantz. J. f. Orn. 1869, p. 369 [8]; Salv. P. Z. S. 1870, p. 216 [9].
Leptodon cayennensis, Sharpe, Cat. Birds Brit. Mus. i. p. 333 [10]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 153 [11]; Sumichrast, La Nat. v. p. 237 [12]; Boucard, P. Z. S. 1883, p. 457 [13]; Salv. Cat. Strickl. Coll. p. 505 [14]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [15].

Supra schistaceo-niger, alis indistincte nigro transfasciatis, capite et cervice griseis: subtus albus, tibiis irregulariter nigro transfasciatis; subalaribus nigris, remigibus nigris, griseo transfasciatis; cauda nigra,

albo stricte terminata et griseo (subtus albo) trifasciata: rostro nigro; mandibula, cera et loris nudis, cinerascentibus; pedibus plumbeis; iride brunnea. Long. tota circa 21·0, alæ 13·0, caudæ 10·0, tarsi 1·8. (Descr. feminæ ex Izalam, Yucatan. Mus. nostr.)

Juv. Supra fusco-niger, capite toto et cervice concoloribus, plumis ad basin albis: subtus plumis medialiter fusco-nigricantibus, subcaudalibus albis medialiter rufis.

Junior. Fuscus, plumis stricte fulvo limbatis, capite summo nigro; fronte, superciliis, cervice postica et corpore subtus albis.

Hab. Mexico, Tampico (*Richardson*), Jalapa (*de Oca*), Tlacotalpam [12], Santa Efigenia [7], Cacoprieto, Tapanatepec [12], Oaxaca (*Sumichrast*), Mirador (*Sartorius* [11]), Tonala in Chiapas (*Richardson*), Izalam in Yucatan (*Gaumer* [13]); British Honduras, Orange Walk (*Gaumer*), Cayo in the Western District (*Blancaneaux*); Guatemala (*Constancia* [14]), Escuintla (*O. S. & F. D. G.*); Honduras (*Mus. Brit.* [10]), San Pedro (*Leyland* [4]); Nicaragua, San Emilio, Lake of Nicaragua (*Richardson*); Costa Rica (*v. Frantzius* [8]), Nicoya (*E. Arcé*), Pozo Azul de Pirris, Birris de Cartago [15] (*Zeledon*), Talamanca (*Gabb* [11]); Panama, Volcan de Chiriqui, Bugaba [9] (*E. Arcé*), Lion Hill (*M'Leannan* [6]).—South America, tropical parts generally [10].

Leptodon cayennensis is well known throughout Central and Tropical South America, but is nowhere common. The species occurs in various parts of Mexico, where Sumichrast [12] considers it to be resident, as he obtained a female, in May 1871, whose ovary contained eggs nearly ready for extrusion; he states that the bird inhabits forests, selecting trees of the thickest foliage and feeding chiefly on molluscs; it frequents also the neighbourhood of seas and rivers. From its habit of searching the ground for gastropods, the bill, feet, and plumage are often much soiled.

Specimens from every Central-American State from Mexico to Panama, Salvador excepted, are in our collection.

REGERHINUS.

Regerhinus, Kaup, Mus. Senckenb. iii. p. 262 (1845); Ridgway, Bull. U. S. Geol. & Geogr. Surv. ii. p. 156.

Leptodon, pt., Sharpe, Cat. Birds Brit. Mus. i. p. 329.

This genus differs from the preceding one in having the cutting-edge of the upper mandible without indentations. Other characters pointed out by Mr. Ridgway are the differently shaped bill, the weak feet, and the more compressed toes and claws. The plumage is soft as in the allied genera of Kites; the feathers of the lower surface of the body are very broad, with nearly truncate tips. The stages of plumage passed through by members of this genus are difficult to account for, but after careful study we are inclined to believe, with Dr. Sharpe, that they are produced by a gradual alteration in the pattern of the feathers effected without moulting. In this and the allied forms melanistic examples of young and old birds are frequently met with.

Three species of *Regerhinus* are recognized, all of them peculiar to the Neotropical Region. *R. uncinatus* has a very wide range in Southern and Central America,

almost co-extensive with that of the genus *Leptodon*. Its larger-billed representative, *R. megarhynchus*, appears to be a more western bird, and is found from Bolivia and Peru, northward to Western Mexico. The third species, *R. wilsoni*, is confined to the island of Cuba.

1. Regerhinus uncinatus.

Falco uncinatus, Temm. Pl. Col. 103, 104, 105 [1].

Cymindis uncinatus, Scl. & Salv. Ibis, 1859, p. 219 [2]; P. Z. S. 1864, p. 369 [3]; Lawr. Ann. Lyc. N. Y. ix. p. 134 [4].

Leptodon uncinatus, Sharpe, Cat. Birds Brit. Mus. i. p. 330 [5]; Boucard, P. Z. S. 1878, p. 45 [6].

Regerhinus uncinatus, Kaup, Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 156 [7]; Nutting, Pr. U. S. Nat. Mus. v. p. 403 [8].

Supra schistaceus, unicolor: subtus dilutior, abdomine toto stricte albo transfasciato, tectricibus subcaudalibus albidis; subalaribus schistaceis albo transfasciatis, remigibus nigris griseo transfasciatis; cauda nigra, albo terminata et griseo bifasciata: rostro plumbeo, mandibula et pedibus flavidis; cera et loris viridibus; iride alba. Long. tota circa 17·5, alæ 11·0, caudæ 8·0, tarsi 1·4. (Descr. exempl. ad. ex Yucatan. Mus. nostr.)

Forma alia. Saturate schistaceus, fere unicolor; cauda nigra albido terminata, fascia lata mediana alba.

Forma alia. Fuliginosus, unicolor; cauda nigricante, fasciis duabus sordide albis notata; remigibus subtus albido maculatis.

Juv. Fuscus, plumis stricte rufo limbatis, cervice postica et corpore subtus albis, hoc fusco fasciato; tibiis rufo fasciatis; alis subtus stricte fulvo fasciatis, remigibus nigris griseo fasciatis; cauda nigra, fusco-albido trifasciata.

Hab. Mexico, Buctzotz in N. Yucatan (*Gaumer*); Guatemala (*Skinner* [2]); Costa Rica, San José (*Frantzius* [4]), Naranjo (*Boucard* [6]), La Palma (*Nutting* [8]), Barranca (*E. Arcé*); Panama (*E. Arcé*, *Reeves* [7]), Lion Hill (*M'Leannan* [3]).—South America to Bolivia [5].

= J. H. Roorne. cited in error by Ridgway as "Reeves".

Sent us by Skinner from Guatemala and recorded by M. Boucard [6] as having been found by him in April in Costa Rica, where he says its cry resembled that of a Peacock, and though occurring in several places in that country the species is nowhere plentiful.

Mr. Nutting also relates that at La Palma, in the Gulf of Nicoya, this Kite is frequently heard, especially in the evening.

2. Regerhinus megarhynchus.

Regerhinus megarhynchus, Des Murs, in Casteln. Voy., Ois. p. 9, t. 1 (1855) [1]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 160 [2]; Gurney, Ibis, 1880, p. 318 [3].

Leptodon megarhynchus, Sharpe, Cat. Birds Brit. Mus. i. p. 332 [4].

Cymindis uncinatus (nec Temm.), Lawr. Bull. U. S. Nat. Mus. no. 4, p. 43 [5].

Leptodon uncinatus (nec Temm.), Sumichrast, La Nat. v. p. 237 [6].

R. uncinato similis, sed rostro valde majore et crassiore; cera lorisque viridibus; macula suboculari flava; pedibus aurantiacis; iride alba. Long. tota circa 17·0, alæ 12·4, caudæ 8·4, culm. 1·7, tarsi 1·5. (Descr. exempl. ex Tonala, Chiapas. Mus. nostr.)

Hab. Mexico, Uvero, Cosamaloapam, Chihuitan, Santa Efigenia, Cacoprieto, Tonala (*Sumichrast* [5] [6]).—South America to Bolivia [4].

R. megarhynchus is the large-billed form of *R. uncinatus*, first recorded from Bolivia, later from Peru. We have a specimen from Bahia and another from the Upper Amazons; Gurney mentioned a pair from Mexico in the Norwich Museum, and subsequently we obtained a series from that country collected by Sumichrast. The changes of plumage are identical with those of *R. uncinatus* and melanistic examples also occur.

Sumichrast [6] states that its iris is white, the cere and lores green, the spot below the nostril and eye yellow, the feet orange. In a fresh state the young may be easily recognized by the yellow naked skin between the eye and the bill, so conspicuous in the adult. Its habits are similar to those of *L. cayennensis*, frequenting the vicinity of water and feeding upon molluscs and gastropods.

ICTINIA.

Ictinia, Vieillot, Anal. p. 24 (1816) ; Sharpe, Cat. Birds Brit. Mus. i. p. 364.

On account of its toothed bill, Dr. Sharpe has placed this genus in his subfamily Falconinæ, together with *Baza* and *Harpagus*. Other important characters would, however, in our opinion, suggest *Ictinia* being included among the Kites in the vicinity of *Elanus* and *Leptodon*, although wanting the characteristic soft plumage of these genera. The tail of *Ictinia* is not forked as in *Elanus*, and Mr. Ridgway distinguishes the former genus by the transverse scutellæ of the tarsus and the grooving of the lower surface of the claws.

Two species are known, *I. mississippiensis* and *I. plumbea* : the former an inhabitant of the Southern United States and apparently rare in Central America ; the latter more widely distributed throughout our region and in South America.

1. Ictinia plumbea.

Spotted-tailed Hobby, Lath. Gen. Syn. i. p. 106 [1].

Falco plumbeus, Gm. Syst. Nat. i. p. 283 [2] ; Temm. Pl. Col. 180 [3].

Ictinia plumbea, Vieill. N. Dict. d'Hist. N. xvi. p. 76 [4] ; Scl. P. Z. S. 1856, p. 285 [5] ; 1859, pp. 368 [6], 390 [7] ; Scl. & Salv. Ibis, 1859, p. 220 [8] ; Salv. Ibis, 1861, pp. 140 [9], 146 [10] ; 1890, pp. 84 [11], 89 [12] ; P. Z. S. 1867, p. 158 [13] ; 1870, p. 216 [14] ; Lawr. Ann. Lyc. N. Y. vii. p. 289 [15] ; Bull. U. S. Nat. Mus. no. 4, p. 43 [16] ; Sharpe, Cat. Birds Brit. Mus. i. p. 364 [17] ; Sumichrast, La Nat. v. p. 237 [18] ; Boucard, P. Z. S. 1883, p. 457 [19] ; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 168 [20].

Supra nigricans, schistaceo adumbrata ; alis caudaque nigris, primariis intus castaneis, extus et ad apicem nigris ; rectricibus intus maculis duabus albis fasciatim notatis ; pileo et cervice clare cinereis, interscapulio quoque clare cinereo lavato ; plumis anteocularibus et palpebra nigris ; facie laterali et corpore subtus toto cum subalaribus cinereis, gula vix pallidiore : rostro nigro ; pedibus brunneis ; iride coccinea. Long. tota circa 12·5, alæ 12·2, caudæ 5·0, tarsi 1·45. (Descr. maris ex Peten. Mus. nostr.)

♀ mari similis, sed rectricibus fascia tertia basali alba. Long. tota circa 12·0, alæ 11·7. (Descr. feminæ ex Peten. Mus. nostr.)

Juv. Nigricans, plumis omnibus anguste ochraceo fasciatim terminatis; pileo et corpore subtus ochrascenti-rufis vel ochraceis, nigro longitudinaliter striatis, axillaribus, hypochondriis et subcaudalibus nigro transfasciatis: rostro corneo; pedibus brunnescentibus; iride brunnea. (Descr. ♂ pull. ex Calobre. Mus. nostr.)

Hab. Mexico, El Salto in San Luis Potosi, Tampico (*Richardson*), Paso de la Milpa (*Ferrari-Perez* [20]), Jalapa (*de Oca* [6]), Cordova (*Sallé* [5]), Uvero (*Sumichrast* [18]), Playa Vicente (*Boucard* [7]), Chimalapa, Isthmus of Tehuantepec [16] (*Sumichrast*), Tizimin in N. Yucatan [19] (*Gaumer*); British Honduras, Cayo in the Western District (*Blancaneaux*); Guatemala, Peten, Lanquin [9 10] (*O. S. & F. D. G.*), Cahabon (*Champion*), Sierra de las Minas, Paraiso (*Richardson*); Honduras (*Leyland* [8]), Ruatan I. (*Gaumer* [11 12]); Nicaragua, San Rafael del Norte, Matagalpa (*Richardson*); Panama, Cordillera de Tolé, Calovevora [14], Calobre [14], Santa Fé [13] (*E. Arcé*), Line of Railway (*M'Leannan* [15]).—South America generally, from Colombia and Guiana to Bolivia and Brazil [17].

Though unable to give precise data, judging from the series of specimens in the British Museum, *I. plumbea* is possibly a resident throughout the greater part of South America. Natterer obtained twenty-five examples in Brazil, but only between September and January, which leads one to suppose that it is a winter visitant in that country. There are none but adult examples from Guiana, Amazonia, Bolivia, and Brazil in the Museum; however, young birds occur in collections from Colombia and Ecuador, and there is a nestling from Calobre [14] in Panama. The Nicaraguan specimens in our collection were obtained by Mr. Richardson in March and April, others were procured from Guatemala in April, July, and November, and near Lanquin we saw one building in a pine-tree, patches of which are to be found in many parts of Alta Vera Paz [9 10].

Mr. Richardson procured examples at Tampico in June and from San Luis Potosi in July, so the species doubtless breeds in these provinces. Sumichrast [18], however, states that in Tehuantepec it is only a bird of passage, as also on the coast of Vera Cruz; at San Andres Tuxtla he saw several flocks travelling northwards, but these may have been the allied species *I. mississippiensis*.

In Yucatan *I. plumbea* is not a common bird, and Gaumer obtained but one specimen at Tizimin at the end of March.

2. **Ictinia mississippiensis.**

Falco misisippiensis, Wils. Am. Orn. iii. p. 80, t. 25. f. 1 [1].

Ictinia mississippiensis, Salv. Ibis, 1861, p. 355 [2]; Sharpe, Cat. Birds Brit. Mus. i. p. 365 [3]; Bendire, Life Hist. N. Amer. Birds, p. 177, t. 5. f. 5 [4]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 24, t. 2 [5].

Supra schistacea, scapularibus et tectricibus alarum nigricantioribus; remigibus nigricantibus, primariis vix castaneo longitudinaliter notatis; secundariis clare schistaceis, albo terminatis; cauda nigra; pileo clare cinereo, interscapulio quoque pallide schistaceo adumbrato; loris et palpebra nigris; facie laterali et

corpore subtus clare cineraceis, genis gulaque albidioribus; abdomine albido; subcaudalibus albidis, macula cinerea subterminali notatis; subalaribus et axillaribus cineraceis, margine alari nigricante: rostro nigro; pedibus aurantiaco-rubris; iride coccinea. Long. tota circa 12·0, alæ 11·8, caudæ 5·75, tarsi 1·5. (Descr. exempl. ex Vera Paz, Guatemala. Mus. nostr.)

Juv. Schistaceo-nigricans, plumis rufescente anguste marginatis et celatim albo notatis: rectricibus nigris, extus cinereo, intus albo trifasciatis; pileo et colli lateribus albidis, late nigro striolatis; fascia alba superciliari lata: subtus albicans, maculis ovatis rufescentibus ubique notatus aut striatus. (Descr. maris juv. ex San Antonio, Texas. Mus. nostr.)

Hab. North America, Southern States east of the Rocky Mountains, Texas.—Guatemala, near Coban (*Owen* [2]).

The Mississippi Kite is paler in colour than *I. plumbea*, and is easily distinguished by its light grey secondaries tipped with white. In *I. plumbea* the secondaries are blackish like the rest of the wing, and the primaries are for the most part chestnut, of which colour there is but a faint trace in *I. mississippiensis*; the tail of the latter is black without white cross-bars. The young, moreover, differ from those of *I. plumbea* in having the superciliaries broadly streaked with white, the sides of the face similarly marked, and the breast and underparts with large oval spots; the tail has three grey bands, which become white on the inner webs of all but the centre feathers.

The only known Central-American specimen is the one we possess, captured by the late Robert Owen in Vera Paz [2], where *I. plumbea* is by no means uncommon.

Mr. Ridgway (Man. N. Am. Birds, 2nd edit. p. 225), Captain Bendire [4], and Dr. A. K. Fisher [5], however, state that the Mississippi Kite is found through Eastern Mexico to Guatemala.

In the United States, Captain Bendire says that its breeding-range extends from Louisiana, Mississippi, and Texas northward to Southern Illinois, the Indian Territory, and Kansas; it likewise occurs and probably breeds in South Carolina, Georgia, Florida, and Alabama. In Iowa and Wisconsin the bird is a summer visitor, arriving at the end of April and leaving in October. A few winter in the Southern States.

The food, according to Dr. Fisher [5], consists of lizards, small snakes, frogs, beetles, grasshoppers, and locusts. It frequently ascends to so great a height as to be almost invisible, and in flight resembles the Swallow-tailed Kite.

The nests, composed of sticks, are not bulky, and are usually found in close proximity to each other; fresh leaves and twigs serve to repair the old ones [4]. The eggs, varying from two to three in number, are ovate and bluish white, in rare instances marked with a deeper blue.

HARPAGUS.

Harpagus, Vigors, Zool. Journ. i. p. 338 (1824).

Three species of this Neotropical genus are known, two of which are entirely confined to South America and one to Central America. *H. diodon*, distinguished by its

rufous axillaries, under wing-coverts, and thighs, is found only in Brazil; *H. bidentatus*, which has white under wing-coverts and rufous flanks, inhabits Amazonia and Guiana to Colombia; while *H. fasciatus*, which differs from the last-named species only in its banded flanks, is found in Central America from Panama to Mexico.

The genus is distinguished from the other American Kites by the double tooth in the upper mandible, in which respect it approaches the Falcons; *Harpagus* has, however, the unmistakable soft plumage of the Kites, and is probably not far removed from *Ictinia*, though lacking the long wings of the latter.

1. Harpagus fasciatus.

Harpagus fasciatus, Lawr. Pr. Ac. Phil. 1868, p. 429[1]; Salv. Ibis, 1870, p. 115[2]; Sharpe, Cat. Birds Brit. Mus. i. p. 363[3]; Sumichrast, La Nat. v. p. 237[4]; Nutting, Pr. U. S. Nat. Mus. vi. pp. 377[5], 389[6].

Harpagus bidentatus (nec Lath.), Scl. & Salv. Ibis, 1859, p. 219[7]; P. Z. S. 1864, p. 369[8]; Lawr. Ann. Lyc. N. Y. vii. p. 317[9].

Supra saturate schistaceus, maculis paucis celatis albis notatus; alis schistaceo-brunneis, remigibus nigro fasciatis; secundariis albo fasciatim notatis; cauda nigra, cineraceo anguste terminata, et fasciis tribus cineraceis intus albicantibus notata; pileo saturate schistaceo, facie laterali clariore cinerea; gutture albo, striga malari et altera mediana nigricantibus; corpore reliquo subtus saturate castaneo, albo et schistaceo-nigro regulariter transfasciato; subcaudalibus albis; subalaribus axillaribusque ochrascentibus, paucim nigro maculatis; remigibus intus albo nigroque fasciatis, ad apicem cinerascentibus; cera et palpebris viridescentibus; pedibus brunnescentibus; iride brunnescenti-coccinea. Long. tota circa 14·0, alæ 9·0, caudæ 5·9, tarsi 1·6. (Descr. feminæ ex Miravalles, Costa Rica. Mus. nostr.)

♂ feminæ similis, sed paullo minor, et subtus vix adeo castaneus, fasciis numerosis schistaceis notatus. Long. tota circa 11·5, alæ 7·85.

Juv. Brunneus, plumis anguste ochraceo vel albo marginatis, pileo vix albido striato; cauda brunnea, fasciis saturatioribus quatuor notata et pogonio interno albo partim fasciata; facie laterali saturate brunnea; corpore subtus albo, pectore toto maculis longitudinalibus guttiformibus notato, abdomine et hypochondriis maculis brunneis cordiformibus ornatis; tibiis distincte brunneo transfasciatis. (Descr. exempl. ex Veragua. Mus. Brit.)

Hab. Mexico, Valley of Mexico (*Bouvier, Mus. Brit.*), Santa Efigenia, Cacoprieto, Potrero, Cordova (*Sumichrast*[4]); Guatemala (*Van Patten*[1], *Skinner*[7]), Vera Paz (*Ascoli*); Nicaragua, La Libertad, Chontales (*Richardson*), San Juan del Sur[5], Sucuyá[6] (*Nutting*); Costa Rica (*Carmiol*), Miravalles (*Underwood*); Panama (*M'Leannan*[8 9], *E. Arcé*), David, Chiriqui (*Watson, Mus. Brit.*).

H. fasciatus is nearly allied to the South-American *H. bidentatus*, but differs in having a more banded under surface, and the greyish bars are broader and more distinct on the sides of the body.

The species is nowhere common, though extending from Mexico to Panama. It was first described by Lawrence from Guatemala from a specimen acquired by Van Patten[1], and we possess an example from the same country obtained by Skinner[7]. Another was also sent by Ascoli from Vera Paz in 1893, but we did not observe it there. A specimen in the British Museum, received from M. Bouvier, and said to

have been shot in the Valley of Mexico, was the first evidence of its occurrence so far north, but Sumichrast afterwards met with it at various places, as recorded above [4].

We have an example from Nicaragua procured by Mr. Richardson at La Libertad in Chontales in January, and Mr. Nutting found the species at San Juan del Sur [5] and also at Sucuyá [6]. From Costa Rica our collectors sent us both mature and immature examples, and recently the British Museum received skins from David in Chiriqui from Mr. Watson.

H. fasciatus is not known to occur beyond the limits of Central America, and no information of its habits is forthcoming. A living bird brought by natives to Mr. Nutting refused food and was quite untameable.

Subfam. *MICRASTURINÆ.*

This subfamily includes one genus, *Micrastur*, with several species, all belonging to Central and South America.

According to Mr. Ridgway's analysis of the relative positions of his groups, the *Micrastures* are associated with the *Falcones* and *Polybori* rather than with *Herpetotheres*. In reality, the former are quite as distinct as any of the others, if not more so. The long tail and short wings, together with the long legs, have usually led to *Micrastur* being associated with *Astur* and *Accipiter*, but the position of the scapular process of the coracoid with respect to the clavicle shows that this apparent relationship cannot be relied on. Moreover, the presence of a partial facial ruff and a large ear-opening suggests an affinity to *Circus*. Mr. Ridgway gives the *Micrastures* the following characters :—"Posterior toe abbreviated, very much shorter than the lateral pair; tarsi and toes covered with small hexagonal scales, larger in front. Nostril, a large opening with bony-rimmed margin or central tubercle. Superciliary process of the lachrymal elongated, broad, extending nearly across the orbit. Tomia without tooth or notch. Posterior margin of sternum as in *Falcones*, viz., nearly even, with a pair of large oval fenestra. Four or more outer primaries with inner webs sinuated near the inner portion."

MICRASTUR.

Micrastur, G. R. Gray, List Gen. Birds, p. 6 (1841); Scl. & Salv. P. Z. S. 1869, p. 364; Ridgw. Pr. Acad. Phil. 1875, p. 470; Sharpe, Cat. Birds Brit. Mus. i. p. 74.

In general appearance the species of *Micrastur* are stout and thick-set birds, and bear some resemblance to the smaller Goshawks; but, for the reasons given above, we prefer to keep them as a separate subfamily in the vicinity of *Herpetotheres*.

1. **Micrastur melanoleucus.**

Negri blanco, Azara, Apunt. i. p. 124 [1].
Faxado, Azara, Apunt. i. p. 126 [2].

Sparvius semitorquatus, Vieill. N. Dict. d'Hist. N. x. p. 322 [3].
Micrastur semitorquatus, Strickl., Scl. & Salv. Ibis, 1859, p. 218 [4]; Salv. P. Z. S. 1870, p. 216 [5]; Cat. Strickl. Coll. p. 497 [6]; Lawr. Ann. Lyc. N. Y. ix. p. 134 [7]; Mem. Bost. Soc. N. H. ii. p. 299 [8]; Bull. U. S. Nat. Mus. no. 4, p. 40 [9]; v. Frantz. J. f. Orn. 1869, p. 369 [10]; Sharpe, Cat. Birds Brit. Mus. i. p. 75 [11]; Boucard, P. Z. S. 1878, p. 44 [12]; Sumichrast, La Nat. v. p. 235 [13]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 10 [14].
Climacocercus semitorquatus, Cab. J. f. Orn. 1865, p. 407 [15].
Sparvius melanoleucus, Vieill. N. Dict. d'Hist. N. x. p. 327 [16].
Micrastur melanoleucus, Ridgw, Pr. Ac. Phil. 1875, p. 482 [17]; Nutting, Pr. U. S. Nat. Mus. vi. p. 377 [18]; Boucard, P. Z. S. 1883, p. 457 [19]; Richm. Pr. U. S. Nat. Mus. xviii. p. 628 [20]; Bangs, Pr. N. Engl. Zool. Club, ii. p. 15 [21].
Falco percontator, Cabot, Journ. Bost. Soc. N. H. iv. p. 462 [22].

Supra niger, supracaudalibus albo anguste terminatis et latius transfasciatis; remigibus nigricantibus, obscure brunneo, intus albo fasciatis; cauda nigra, albo terminata et fasciis albis 4-fasciata; pileo nigro; torque collari albo; genis et regione parotica albis, griseo adumbratis, hac fascia circulari nigra circumcincta; corpore subtus albo, rhachidibus nigris vix evidentibus; subalaribus albis, nigro maculatis; axillaribus albis, striis rhachidalibus nigris: rostro nigro; cera, loris et orbitis nudis olivascenti-viridibus; pedibus flavis; iride pallide brunnea. Long. tota circa 22·0, alæ 10·8, caudæ 10·4, culm. 1·1, tarsi 3·35. (Descr. maris ex Colima. Mus. nostr.)

Juv. ab adulto valde dissimilis. Nigricanti-brunneus, torque collari ochraceo interrupto; alis caudaque brunneis, ut in adulto fasciatis; genis et facie laterali et corpore subtus toto pallide ochrascenti-fulvis, fasciis latis cordiformibus vel transversis regulariter vittatis. Long. tota circa 23·5, alæ 10·5. (Descr. exempl. ex Medio Monte, Guatemala. Mus. nostr.)

Hab. MEXICO, both coasts (*Sumichrast* [13]), Mazatlan (*Grayson* [8]), Presidio de Mazatlan (*Forrer*), Sierra Madre de Colima (*Xantus* [17]), Plains of Colima, Tehuantepec (*Richardson*), Mirador (*Sartorius* [17]), Tehuantepec city [9 17], Santa Efigenia [9], Tonala (*Sumichrast*), Altamira, Tampico (*Armstrong* [20]), Yucatan (*Cabot* [22], *Gaumer* [19]); GUATEMALA (*Constancia* [6], *Skinner* [4]), Retalhuleu, Medio Monte, Savana Grande (*O. S. & F. D. G.*); SALVADOR, La Libertad (*Richardson*); NICARAGUA, San Juan del Sur (*Nutting* [18]); COSTA RICA (*v. Frantzius* [10]), San José, Angostura (*Carmiol* [17]), Las Cruces de Candelaria, Rancho Redondo (*v. Frantzius* [17], *Zeledon* [7]), Candelaria Mts. (*Boucard* [12]), Talamanca, Lipurio (*Gabb* [17]), Sibahue, Irazu, Bebedero (*Underwood*); PANAMA, Mina de Chorcha (*E. Arcé* [5]), Lion Hill (*M'Leannan* [17], *Brown* [21]), Laguna de Pita (*Festa* [14]).—SOUTH AMERICA generally to Paraguay [1 3 11].

We agree with Mr. Ridgway [17] that *melanoleucus* is a more correct name for this Hawk than that of *semitorquatus*, both having been published in the same work [3 16]. It is the largest member of the genus *Micrastur*, and is further distinguished from the smaller forms, such as *M. guerilla* and its allies, by the uniformly coloured under surface. *M. melanoleucus* is found throughout the greater part of the forest country of the Neotropical region, from Mexico to Brazil and Paraguay. Although most of our specimens come from the western provinces, Sumichrast [13] states that it inhabits the "tierra caliente" of both coasts of Mexico. Mr. Armstrong, moreover, met with

the species at Altamira, near Tampico [20], and its range can be traced through all the other countries of Central America. The bird appears to be everywhere resident, as it was met with in Tehuantepec by Sumichrast and Richardson in February, April, July, and November, and by Forrer at Presidio de Mazatlan in February and April. We procured two young specimens at Medio Monte in Guatemala in August and December, and M. Boucard obtained an example in May in the Candelaria Mountains, Costa Rica.

According to Sumichrast [13], *M. melanoleucus* does not soar in the air like other large Hawks, but seeks its prey in the thickest parts of large woods, crouching along the branches of trees after the manner of the Caprimulgidæ; its cry resembles that of *Herpetotheres cachinnans*.

The food of this species consists principally of iguanas and other lizards, but it also takes young birds and insects.

2. **Micrastur amaurus.** (Tab. LXV.)

Micrastur amaurus, Gurney, Ibis, 1879, p. 173 [1]; List of Diurn. Birds of Prey, p. 24 [2].

Nigricans; torque collari nullo; alis fasciis vel maculis fulvescentibus celatim notatis; supracaudalibus nigris, albo maculatim transfasciatis; rectricibus nigris, albo terminatis et fasciis albis transversim 4-notatis: subtus nigricans, pectore imo, abdomine, hypochondriis tibiisque, subalaribus et subcaudalibus albo vel fulvo fasciatim maculatis; alis subtus eodem modo notatis. Long. tota circa 22·0, alæ 10·1, caudæ 10·4, tarsi 3·55. (Descr. exempl. ex Panama. Mus. nostr.)

Hab. Panama (*mus. nostr. & Mus. Norv.* [1 2]).

In 1879 Gurney [1] described this species from two Panama specimens—one in the Norwich Museum, the other in our collection. The blackish tone of the plumage and the absence of a nuchal collar caused him to separate it from *M. melanoleucus*, of which, after close comparison with the series in our collection and that of the British Museum, we believe it to be a melanistic form, but only an examination of a still larger series can determine this with certainty. Our figure is taken from one of the types.

3. **Micrastur mirandollei.** (Tab. LXIV.)

Astur mirandollei, Schl. Nederl. Tijdschr. i. p. 131 [1]; Mus. Pays-Bas, Astures, p. 27 [2].

Micrastur mirandollei, Scl. & Salv. P. Z. S. 1867, p. 759 [3]; 1869, p. 365 [4]; Sharpe, Cat. Birds Brit. Mus. i. p. 76 [5]; Ridgw. Pr. Ac. Phil. 1875, p. 485 [6].

Micrastur macrorhynchus, Pelz. Reise d. Nov., Vög. p. 11 [7]; Orn. Bras. p. 7 [8].

Micrastur polioyaster, Lawr. Ann. Lyc. N. Y. vii. p. 317 (nec Temm.) [9].

Supra saturate schistaceus, alis vix brunnescentioribus, intus obscure nigro fasciatis; pileo dorso concolore; cauda nigra, anguste brunneo terminata et fasciis brunnescentibus albido mixtis trivittata; regione parotica pallide schistacea, fascia posteriore saturate schistacea circumdata; genis et corpore subtus toto albis, rhachidibus plumarum schistaceis, strigas angustas formantibus; subalaribus et axillaribus pure albis: rostro plumbescenti-nigro; cera flava; pedibus aurantiaco-flavis; iride brunnea. Long. tota circa 17·8, alæ 9·2, caudæ 7·2, culm. 1·1, tarsi 3·05. (Descr. feminæ ex fl. Rupernuni in Guiana. Mus. nostr.)

Juv. adulto similis, sed nigricanti-brunneus, facie laterali tota nigricanti-brunnea; corpore subtus pallide cervino-brunneo, plumis fuscescenti-brunneo marginatis; tibiis, crisso et subcaudalibus pallidioribus, concoloribus; cauda nigricanti-brunnea, albo terminata et fasciis duabus albis brunneo marmoratis notata. Long. tota circa 17·5, alæ 9·0. (Descr. exempl. ex Panama. Mus. Brit.)

Hab. Costa Rica, Talamanca (*Gabb* [6]); Panama (*Mus. Brit.*), Line of Railway (*M'Leannan* [9]).—South America, Amazonia [3 4 7], Guiana [1].

This species nearly equals *M. melanoleucus* in size, and resembles that bird in having the under surface uniformly coloured. It may be distinguished, however, by the absence of any white or rufous collar on the hind part of the neck, and by the uniform white under wing-coverts. There are only three pale bands on the tail, instead of four, as in *M. melanoleucus*. Within our region, *M. mirandollei*, so far as at present known, is confined to Costa Rica and the State of Panama. In addition to the specimen obtained by Mr. M'Leannan, there is another from Panama in the British Museum.

Nothing has been recorded concerning the habits of this species, but they are probably similar to those of the other members of the genus.

4. Micrastur guerilla.

Micrastur guerilla, Cassin, Pr. Ac. Phil. 1848, p. 87 [1]; Journ. Ac. Phil. i. t. 40 [2]; Scl. & Salv. P. Z. S. 1869, p. 367 [3]; 1870, p. 838 [4]; Salv. P. Z. S. 1870, p. 216 [5]; Sharpe, Cat. Birds Brit. Mus. i. p. 79 [6]; Ridgw. Pr. Ac. Phil. 1875, p. 486 [7]; Sumichrast, La Nat. v. p. 235 [8]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 126 [9]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 520 [10].

Micrastur concentricus, Scl. P. Z. S. 1856, p. 285 [11] (nec Less.).

Micrastur gilvicollis, Scl. P. Z. S. 1858, p. 96 [12] (nec Vieill.); Scl. & Salv. Ibis, 1859, p. 218 [13]; Lawr. Ann. Lyc. N. Y. vii. p. 317 [14].

Micrastur xanthothorax, Scl. P. Z. S. 1859, p. 368 [15] (nec Temm.).

Micrastur ruficollis, Scl. & Salv. Ibis, 1859, p. 218 [16] (nec Vieill.).

Supra saturate schistaceus, tectricibus alarum dorso concoloribus, majoribus autem et remigibus brunnescentioribus, his intus albo fasciatim notatis; rectricibus nigris, anguste albo terminatis et fasciis duabus albidis vel pallide brunnescentibus notatis; facie laterali et gula totis schistaceis; gastræo reliquo subtus toto albo et schistaceo-nigro regulariter transfasciato; tibiis, subcaudalibus, subalaribus et axillaribus pectore concoloribus et in eodem modo fasciatis. Long. tota circa 13·0, alæ 6·75, caudæ 6·1, culm. 0·75, tarsi 2·4. (Descr. maris ex Rio Coco, Nicaragua. Mus. nostr.)

♀ *ad.* mari similis, sed magis brunnescens, cauda lineis angustis albis 4-fasciata; gastræi fasciis latioribus et brunnescentioribus. Long. tota circa 13·5, alæ 6·9. (Descr. feminæ ex La Libertad, Nicaragua. Mus. nostr.)

Juv. Brunneus, pileo paullo saturatiore; torque cervicali albo interrupto; cauda nigra, albo terminata et anguste albo 4-fasciata: subtus albus, ochraceo lavatus, et fasciis paucis latis nigricantibus notatus; subcaudalibus albidis, immaculatis; facie laterali alba, brunneo maculata, regione parotica postice nigro circumdata. (Descr. feminæ juv. ex Rio Coco, Nicaragua. Mus. nostr.)

Hab. Mexico, Jalapa (*Pease* [1], *de Oca* [15], *Höge*), Cuesta de Misantla (*M. Trujillo*), Orizaba, Uvero (*Sumichrast* [8]), Cordova (*Sallé* [3 11]); British Honduras, Cayo, in the Western District (*Blancaneaux*); Guatemala (*Skinner* [13], *Van Patten* [7 16]), Vera Paz, Choctum (*O. S. & F. D. G.*[3]); Honduras, San Pedro (*Whitely* [4]);

Nicaragua, Matagalpa, La Libertad, Santo Domingo, Rio Coco (*Richardson*), Lake Managua (*Mus. Brit.*), Rio Escondido (*Richmond* [10]); Costa Rica (*v. Frantzius* [7], *Gabb* [7]), Monte Redondo (*Zeledon* [9]), Estrella, Jiménez, Irazu, Talamanca, Pozo del Pital, Carillo (*Underwood*); Panama, Volcan de Chiriqui, Calovevora [5], Calobre (*E. Arcé*), Lion Hill (*M'Leannan* [14]).—South America, Colombia, Ecuador [3].

M. guerilla belongs to the smaller section of the genus *Micrastur*, in which all the species are characterized by a closely-barred under surface. It differs from its South-American allies in having the abdomen barred like the breast.

Though procured in nearly every State within our limits, and of most frequent occurrence in Costa Rica, this species appears to be nowhere common.

We have no record of its food or habits.

Group B.

Subfam. *HERPETOTHERINÆ*.

This subfamily contains the single genus *Herpetotheres*, which again consists of one species only, *H. cachinnans*, a bird of wide range in South and Central America. Mr. Ridgway, in his 'Outlines of a Natural Arrangement of the Falconidæ,' makes *Herpetotheres* the representative of one of his four groups of Falconinæ, the Herpetotherinæ of the 'Nomenclator Avium Neotropicalium.' He gives it the following characters, which, taken together, separate it from the other groups of the same main section of the family:—"Posterior toe elongated, almost equal to the lateral pair. Tarsi and toes covered uniformly with thin, rough, imbricated scales. Tomia without tooth or notch. Nostrils as in the *Falcones* and *Polybori*. Superciliary process of the lachrymal elongated, very broad, reaching nearly across the orbit. Posterior margin of the sternum nearly even, entire, and without foramina. Primaries as in *Polybori* and *Micrastures*." Mr. Ridgway also extracts some characters of the pterylography of *Herpetotheres* and *Micrastur* from Nitzsch's work, by which these groups may be distinguished. *Herpetotheres* has distinct eyelashes; the lumbar tract is present; the dorsal portion of the spinal tract is sparsely feathered to the caudal pit, thence diminished and continued as a narrow band along the caudal vertebræ to the oil-gland.

HERPETOTHERES.

Herpetotheres, Vieillot, N. Dict. d'Hist. N. xviii. p. 317 (1817); Sharpe, Cat. Birds Brit. Mus. i. p. 277.

This genus bears a strong outward resemblance to the Serpent-Eagles (*Circaetus*, *Spilornis*, &c.) of the Old World, especially as regards the coarse reticulation of the tarsus. Like the species of the above-named genera, *Herpetotheres* feeds upon reptiles and grasshoppers, and is arboreal in its habits.

1. Herpetotheres cachinnans.

Falco cachinnans, Linn. Syst. Nat. i. p. 128 [1].

Herpetotheres cachinnans, Vieill., Scl. P. Z. S. 1857, p. 201 [2]; 1859, pp. 368 [3], 389 [4]; Moore, P. Z. S. 1859, p. 52 [5]; Scl. & Salv. Ibis, 1859, p. 215 [6]; P. Z. S. 1870, p. 838 [7]; Lawr. Ann. Lyc. N. Y. vii. p. 289 [8]; ix. p. 132 [9]; Mem. Bost. Soc. N. H. ii. p. 300 [10]; Bull. U. S. Nat. Mus. no. 4, p. 41 [11]; v. Frantz. J. f. Orn. 1869, p. 367 [12]; Salv. P. Z. S. 1870, p. 214 [13]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 137 [14]; Sharpe, Cat. Birds Brit. Mus. i. p. 278 [15]; Sumichrast, La Nat. v. p. 237 [16]; Nutting, Pr. U. S. Nat. Mus. vi. p. 389 [17]; Boucard, P. Z. S. 1883, p. 457 [18]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 168 [19]; Chapman, Bull. Amer. Mus. N. H. viii. p. 286 [20]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 521 [21].

Supra brunneus, plumis singulis anguste rufescenti-brunneo marginatis; alis dorsi concoloribus, scapularibus et secundariis intimis celatim rufo vel ochraceo notatis; remigibus obscure brunneo fasciatis, intus ochraceo fasciatim notatis; primariis ochraceis vel rufescentibus, juxta rhachidem brunneo maculatis vel semifasciatis, versus apicem brunneis; supracaudalibus longioribus ochrascenti-fulvis, immaculatis; rectricibus nigricantibus, ochraceo terminatis et vittis latis ochraceis 5-transfasciatis; pileo et cervice toto ochrascenti-albis, illo striis rhachidalibus nigris notato; linea angusta superciliari et facie laterali tota nigris; regione parotica ad fasciam latam nuchalem nigram utrinque conjuncta; genis anticis et corpore subtus toto pallide ochrascentibus, gutture albidiore; subalaribus, axillaribus et alis intus pallide rufescentibus, vix brunneo maculatis, his versus apicem fusco fasciatis: rostro plumbescenti-nigro, cera et mandibulæ basi flavis; pedibus viridescenti-flavis vel sordide albis; iride pallide brunnea. Long. tota circa 19·5, alæ 10·9, caudæ 8·7, tarsi 2·25. (Descr. maris ex Brit. Honduras. Mus. nostr.)

♀ *ad.* mari similis. Long. tota 19·5, alæ 10·7. (Descr. feminæ ex Brit. Honduras. Mus. nostr.)

Juv. adulto similis, et eodem modo picturatus, sed saturatior, notæi plumis latius rufo marginatis; scapularibus nonnullis extus rufis, intus ochrascenti-albis; caudæ fasciis tribus magis rufescentibus.

Hab. Mexico, both coasts (*Sumichrast* [18]), West and South Sonora (*Grayson* [10]), Mazatlan (*Grayson* [10]), Beltran and Zapotlan in Jalisco (*Lloyd*), Volcan de Colima (*Richardson*), Chietla, Santa Ana (*Ferrari-Perez* [19]), Jalapa (*Sallé* [2], *de Oca* [3]), Vega del Casadero (*M. Trujillo*), Playa Vicente (*Boucard* [4], *M. Trujillo*), Chimalapa (*Richardson*), Tehuantepec (*Sumichrast* [11], *Richardson*), Tapana [11], Tonala (*Sumichrast*), Teapa in Tabasco (*Mrs. H. H. Smith*), N. Yucatan (*Gaumer* [18]), Chichén Itzá (*Chapman* [20]); British Honduras, Western District (*Blancaneaux*); Guatemala, Chimalapa (*O. S.*[6]), Choctum, Escuintla, Retalhuleu (*O. S. & F. D. G.*); Honduras, Omoa (*Leyland* [5]), San Pedro (*Whitely* [7]); Nicaragua, Matagalpa, San Emilio, Lake of Nicaragua (*Richardson*), Chontales (*Belt*), Sucuyá (*Nutting* [17]), Rio Escondido (*Richmond* [21]); Costa Rica (*v. Frantzius, Carmiol*), Talamanca (*Gabb* [14], *Underwood*), Bebedero, Miravalles (*Underwood*); Panama, Boquete de Chitra (*E. Arcé* [13]), Line of Railway (*M'Leannan* [8]).—South America generally to S. Brazil and Paraguay [15].

In Mexico the species is, according to Sumichrast, found on both coasts, and specimens have been procured from nearly every province, and in Vera Cruz and Tehuantepec he speaks of it as common up to an elevation of 1000 metres [18].

Dr. Gaumer obtained it in Northern Yucatan, and M. Blancaneaux in the western district of British Honduras. In Guatemala we found it not uncommon on the

Atlantic coast, and about the village of Chimalapa the species was of frequent occurrence. Throughout the Pacific coast-region the bird is apparently less numerous, a single individual only being observed near the Hacienda "La Grande." Specimens were collected by Leyland and George Whitely in Honduras, the former stating that it was tolerably abundant near Omoa.

In Nicaragua Mr. Nutting shot a single specimen in swampy country near Sucuyá. From Matagalpa and San Emilio we have received examples from Mr. Richardson, and, judging from Mr. Richmond's notes, the species occurs plentifully on the Escondido River. It is not unfrequent in collections from Costa Rica and Panama, as well as from the greater part of South America, though not ranging high in the mountainous regions.

The peculiar cry of *H. cachinnans* has gained for it the name of the "Laughing-Falcon." Leyland[5] says that its call could be heard for miles, while Mr. Richmond avers that the laugh preceding the cry is only audible close at hand. The birds call most frequently about dusk, and they may be heard until after dark. The species is known by the name of the "Rain-Crow" to the Americans on the Escondido River, and by that of "Guansi" to the natives of Guatemala. Mr. Chapman has also given an amusing account of the bird and its laughing-note[22]. It subsists chiefly upon reptiles and rodents, but occasionally preys on birds and grasshoppers.

The nest and eggs are at present unknown.

Subfam. *FALCONINÆ.*

The Falcons (Falconinæ) are nearly world-wide in their distribution, and some members of the subfamily are found as far north as any of the Accipitres. The most familiar genus is *Tinnunculus*, some one or more members of which occur in most of the temperate and tropical parts of the globe.

Treating the Kestrels (*Tinnunculus*) as belonging to a distinct genus from the Falcons (*Falco*), we have but these two genera of the Falconinæ in our region, the species of which, as will be seen below, are widely spread either over North or South America or, it may be, over the entire Neotropical Region.

Dr. Coues defines the Falconinæ as follows:—"Bill furnished with a sharp tooth and notch near the end of the cutting-edge of the maxilla (sometimes with two such teeth), and the end of the mandible truncated with a notch near the tip. Nostrils circular, placed high in the cere, with a prominent central tubercle. Inter-nasal septum extensively ossified. Palate with a median keel anteriorly. Superciliary shield prominent in one large piece . . . . Wings strong, long and pointed, with rigid and usually straight and tapering flight-feathers; the tip formed by the second and third quills, supported nearly to their ends by the first and fourth which are longer than the fifth, only one or two outer primaries emarginate on the inner webs near the end. Tail

short and stiff, with more or less tapering rectrices. Feet strong, rather short, the tarsus shorter than the tibia, feathered more or less extensively, elsewhere irregularly reticulate in small pattern varying with the genera or subgenera; never scutellate in single series before or behind. Middle toe very long; talons very strong."

FALCO.

Falco, Linnæus, Syst. Nat. i. p. 124 (1766); Sharpe, Cat. Birds Brit. Mus. i. p. 374 (1874).

Of this genus, in its widest sense, about forty species are known, including all the true Falcons, the Hobbies, and the Merlins; and if the Gyr-Falcons (*Hierofalco*), to which Dr. Bowdler Sharpe considers *Falco mexicanus* to belong, are added, the number recognized would be more than fifty. This large assemblage of Birds of Prey is represented by species in every quarter of the globe, Peregrines and Hobbies being found in all the zoological regions, while Merlins and Gyr-Falcons breed more to the northward, the latter being resident, while the Merlins are known as migrants to temperate regions in winter.

All members of the genus *Falco*, whether large or small, have powerful feet and talons, with the outer toe longer than the inner one, the Gyr-Falcons alone having the outer and inner toe about equal in length.

1. Falco peregrinus.

Falco peregrinus, Tunstall, Orn. Brit. p. 1[1].

Falco anatum, Scl. & Salv. Ibis, 1859, p. 219[2]; Salv. P. Z. S. 1867, p. 158[3]; Dugès, La Nat. i. p. 138[4].

Falco peregrinus, var. *anatum*, Lawr. Mem. Bost. Soc. N. H. ii. p. 300[5].

Falco peregrinus anatum, Ridgw. Pr. U. S. Nat. Mus. x. p. 577[6]; Bendire, Life Hist. N. Amer. Birds, i. p. 292, t. 10. figs. 5–7[7]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 106, t. 15[8]; Nelson, N. Amer. Fauna, no. 14, p. 38 (1899)[9].

Falco peregrinus, var. *nigriceps*, Grayson, Pr. Bost. Soc. N. H. xiv. p. 268[10].

Falco communis, Sharpe, Cat. Birds Brit. Mus. i. p. 376[11].

Supra pulchre cinereus, plumis plerisque schistaceo-nigro fasciatis; pileo saturate cinereo concolore, rhachidibus plumarum vix nigro indicatis; interscapulio saturatiore et latius nigro transfasciatim notato; remigibus nigricantibus, extus cinereo lavatis, intus pallide cineraceo fasciatim notatis; cauda cinerea, albido terminata et fasciis interruptis nigris regulariter notata, fascia nigra subterminali latiore; loris et fronte basali albidis; facie laterali genisque nigris, regione parotica postica cinereo lavata; macula suboculari alba; colli lateribus, genis anticis et gastræo toto albidis, hoc plus minusve rubido lavato; pectore maculis paucis nigris linearibus vel sagittiformibus punctulato; pectoris lateribus et hypochondriis tibiisque cinereo adumbratis et regulariter nigro fasciatis; subcaudalibus fulvescenti-albis; subalaribus et axillaribus albis, nigro fasciatis: rostro cyanescente, apicem versus nigro; cera et rictu læte flavis, regione orbitali nuda pallidiore; pedibus pallide flavis, unguibus nigris; iride saturate brunnea. Long. tota circa 16·0, alæ 11·7, caudæ 5·65, culm. 1·0, tarsi 1·8. (Descr. maris ex Corpus Christi, Texas. Mus. nostr.)

♀ [*ad.* mari similis, sed major, saturatior, cauda distincte 10-fasciata; corpore subtus magis rubescente, fasciis nigris fortius indicatis. Long. tota 19·0, alæ 13·6. (Descr. feminæ ex Guadalajara. Mus. nostr.)

Juv. Nigricanti-brunneus, nucha et colli lateribus albo fulvoque maculatim notatis; notæi plumis anguste rufescenti-brunneo marginatis, supracaudalibus rufo maculatis; cauda grisescenti-brunnea, maculis rufis fasciatim 8-notatis; facie laterali genisque nigris, his ad basin et gutture toto cum collo laterali albidis rufo tinctis, hoc anguste nigro lineato; corpore reliquo subtus rufescenti-cervino, plumis medialiter late brunneo striatis, corporis lateribus tibiisque fulvido vel rufescenti-fulvo fasciatim notatis. (Descr. exempl. ex Dueñas. Mus. nostr.)

Hab. North America generally.—Mexico (*Mus. Brit.*[11]), Mazatlan[5], Venado Island (*Grayson*[5]), Tres Marias Is. (*Grayson*[5 10], *Nelson*[9]), Guanajuato (*Dugès*[4]), Hacienda Santa Cruz de la Valle near Guadalajara (*Dr. A. Buller*); Guatemala, Dueñas (*O. S.*[2]); Honduras, Swan Island, Bay of Honduras (*Townsend*[6]); Salvador, Acajutla (*O. S.*); Panama, Santiago de Veraguas (*Arcé*[3]).—South America generally, with the exception of the extreme south; Europe and the greater part of Asia[11].

The Peregrine Falcon of North America is considered by many naturalists to be distinct from the common Peregrine of the Old World, and is separated as *Falco anatum*. We agree, however, with Dr. Sharpe that the differences are not of specific importance.

The Peregrine is doubtless chiefly a migrant in Central America, and specimens have been obtained in various localities. Grayson[10] relates that he observed a pair in Venado Island, off the coast of Mazatlan, which he believed were breeding, as one of the birds entered a cavity in a cliff with food in its claws, apparently to feed its young, but as the eyrie was inaccessible he did not obtain specimens. The Venado bird was the dark western form of Peregrine inhabiting the Pacific coast of North America, and known to naturalists as *F. nigriceps* or *F. pealei*.

The Duck-Hawk, as this Falcon is generally called, breeds in the cliffs on the coasts and rivers and in holes of high trees. Bendire[7] says that nests have also been found in sandstone cliffs close to the ground. The eggs, of a rich dark rufous colour, vary from three to five in number. The food consists chiefly of Ducks, Pigeons, &c., which the bird invariably strikes in mid-air.

2. Falco mexicanus.

Falco mexicanus, Schl. Abh. Geb. Zool. iv. p. 15 (1841)[1]; Mus. P.-B., Falcones, p. 18, note[2]; Ridgw. Man. N. Amer. Birds, ed. 2, p. 247[3]; Bendire, Life Hist. N. Amer. Birds, i. p. 288, t. 10. figs. 2, 3[4]; Fisher, Bull. U. S. Dep. Agric. no. 3, p. 104[5]; A. O. U. Check-l. N. Amer. Birds, p. 137[6].

Hierofalco mexicanus, Sharpe, Cat. Birds Brit. Mus. i. p. 420[7].

Falco polyagrus, Cassin, Birds Cal. & Texas, p. 88[8].

Falco lanarius, var. *polyagrus*, Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 123[9].

Supra brunneus rufo marmoratus, notæi plumis schistaceo-brunneis rufo fasciatis et terminatis; interscapulio maculatim rufo notato, dorso postico, uropygio et supracaudalibus distincte transfasciatis; tectricibus alarum et secundariis intimis dorso concoloribus; remigibus brunneis, schistaceo extus lavatis, intus albido fasciatim notatis, secundariis rufo extus maculatis, intus fasciatis; rectricibus brunneis, griseo adumbratis, albo terminatis, duabus mediis concoloribus, reliquis autem rufo extus maculatis, intus fasciatis; pileo rufescente, plumis medialiter nigris, quasi striatis; frontis basi, loris et supercilio angusto

albidis; facie laterali alba, nigro lineata, regione parotica rufescenti-brunnea; genis rufescentibus nigro striolatis, fasciam latam mystacalem formantibus; genis anticis et corpore subtus toto albis, gutture immaculato; gastræo reliquo maculis longitudinalibus vel cordiformibus notato, hypochondriis tibiisque fere omnino brunneis, rufo notatis et albo fasciatis; subcaudalibus albis, fere immaculatis; subalaribus albis, nigricanti-brunneo maculatis, tectricibus majoribus brunneis, albo maculatis; remigibus infra griseo-brunneis, intus late albo fasciatis: rostro cyanescenti-albo, apicem nigram versus magis cyanescente; cera et area orbitali nuda viridescenti-albis; pedibus pallide flavis, vix viridi tinctis; iride saturate brunnea. Long. tota circa 21·0, alæ 14·0, caudæ 8·1, culm. 1·2, tarsi 2·4. (Descr. feminæ ex Hermosillo, Sonora. Mus. nostr.)

Juv. adultis similis, sed notæi plumis rufo distincte marginatis; fascia albida latiore: subtus albus, ochraceo tinctus, ubique nigro guttulatim notato; hypochondriis nigricantibus, albido variegatis. Long. tota circa 18·0, alæ 13·5. (Descr. maris ex Bidwell, California. Mus. nostr.)

Hab. North America, United States, from the eastern border of the plains to the Pacific, from the Dakotas southward, casual eastward to Illinois.—Mexico (*Deppe*[2]), Hermosillo in Sonora (*Ferrari-Perez*), Zacatecas, Aguas Calientes (*Richardson*).

The Prairie-Falcon, an inhabitant of the plains of the United States, also occurs in Mexico. We have received examples from Hermosillo, in Sonora, from Mr. Ferrari-Perez, and Mr. Richardson has forwarded others from Aguas Calientes and Zacatecas, the latter obtained in August. As our other Mexican specimens were procured from September to March, the species must either be resident or a very early migrant in that country.

The nest, according to Bendire[4], shows but little attempt at construction, and the eyries generally selected are on the inaccessible ledges or in cavities of perpendicular cliffs; he records a clutch of five eggs taken by Mr. Bryant at Pine Cañon near Mount Diablo, California, which were laid in a cleft about four feet deep with only a layer of ejected fur and feathers. In many parts of North America the species is comparatively common.

The bird frequently perches on a dead cotton-wood tree, from which it observes and pounces on its prey. The food consists chiefly of Meadow-Larks, Doves, and other birds, and various small rodents.

The eggs vary from three to five in number and are paler than those of the Peregrines or Gyr-Falcons; they are creamy-white, with rufous or brown mottlings usually distributed over the whole surface.

3. **Falco rufigularis.**

Falco rufigularis, Daud. Traité, ii. p. 131[1]; Salv. Cat. Strickl. Coll. p. 501[2]; Chapman, Bull. Amer. Mus. viii. p. 286[3].

Hypotriorchis rufigularis, Gray, Scl. P. Z. S. 1859, p. 390[4]; Scl. & Salv. Ibis, 1859, p. 219[5]; P. Z. S. 1870, p. 838[6]; Lawr. Ann. Lyc. N. Y. vii. p. 462[7]; Mem. Bost. Soc. N. H. ii. p. 301[8]; Salv. P. Z. S. 1867, p. 158[9]; 1870, p. 215[10]; Ibis, 1869, p. 319[11]; 1889, p. 375[12]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 269[13]; Boucard, P. Z. S. 1883, p. 457[14].

Falco albigularis, Daud. Traité, ii. p. 131[15]; Sharpe, Cat. Birds Brit. Mus. i. p. 401[16]; Sumichrast, La Nat. v. p. 237[17]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125[18]; Ridgw. Pr. U. S.

Nat. Mus. x. pp. 583[19], 592[20]; Cherrie, Auk, 1892, p. 327[21]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 520[22]; xviii. p. 628[23]; Salvad. Boll. Mus. Zool. Torino, xiv. no. 339, p. 11[24]; Nelson, N. Am. Fauna, no. 14, p. 38[25].

Falco aurantius, Licht. Preis-Verz. Mex. Vög. p. 3[26] (*cf.* J. f. Orn. 1863, p. 58[27]) (ex Latham).

Hypotriorchis aurantius, Lawr. Ann. Lyc. N. Y. ix. p. 207[28].

Supra schistaceus, plumis medialiter nigro obscuratis, rhachidibus nigro valde indicatis; pileo et facie laterali nigerrimis, concoloribus; remigibus nigris, intus vix albo fasciatim notatis; rectricibus nigris, griseo vel albido 4- vel 5-fasciatis; gutture et præpectore albis, hoc rufo lavato; pectore toto et hypochondriis nigris, albo transversim fasciatis; abdomine, tibiis et subcaudalibus saturate castaneis, concoloribus; subalaribus et axillaribus nigris, maculis ovatis ochrascenti-albis notatis; cera et plaga nuda orbitali flavis; pedibus pallide aurantiacis; iride saturate brunnea. Long. tota circa 9·0, alæ 7·1, caudæ 3·4, culm. 0·65, tarsi 1·2. (Descr. maris ex fl. Escondido, Nicaragua. Mus. nostr.)

♀ *ad.* mari similis, sed major, pectoris fasciis transversis rufescentioribus et latioribus. Long. tota 10·0, alæ 8·2. (Descr. feminæ ex fl. Escondido, Nicaragua. Mus. nostr.)

Hab. Mexico (*Deppe & Schiede*[26]), Sierra Madre, Sinaloa, Mazatlan, Tres Marias Islands (*Grayson*[8 13 25]), Santa Efigenia, Tapanatepec, Cacoprieto, Orizaba, Mirador, Vera Cruz (*Sumichrast*[17]), Playa Vicente (*Boucard*[4]), Altamira, Tampico (*Armstrong*[23]), Yucatan (*Gaumer*[14]), Merida (*Schott*[28]), Chichén Itzá (*Chapman*[3]); Guatemala (*Constancia*[2], *Skinner*[5]); Honduras, Ruatan Island (*Gaumer*[12], *Townsend*[19]), San Pedro (*Whitely*[6]), Segovia River (*Townsend*[20]); Nicaragua, Escondido River (*Richmond*[22]); Costa Rica (*Carmiol*[11]), San José (*Cherrie*[21]), La Palma de San José, Pozo Azul de Pirris (*Zeledon*[18]); Panama, Line of Railway (*M'Leannan*[7]), Calovevora[10], Volcan de Chiriqui[10], Santa Fé[9] (*Arcé*), Punta de Sabana (*Festa*[24]).—South America generally, excepting the extreme south[16].

Though, like other Falcons, somewhat difficult to procure, *F. rufigularis* is widely distributed throughout South and Central America, extending as far north as the State of Sinaloa in Mexico. In Guatemala and Costa Rica the species is less plentiful, and we did not meet with it in the former country. A favourite hunting-ground is in the clearings of the forest, where, perched on a dead tree, the bird observes and pounces on its prey. The food consists of birds, grasshoppers, &c., and Mr. Richmond records an instance of one capturing a large moth, which was flitting over the tree-tops, on the Escondido River, in Nicaragua[22]. These accounts of the habits of *F. rufigularis* suggest an alliance with the Hobby, but the rapid flight resembles that of the Peregrine, while in the noisy cry it is like the American Kestrel (*Tinnunculus sparverius*) and the "Kill-deer Plover" (*Ægialitis vociferans*)[22].

The nest and eggs are unknown.

4. **Falco deiroleucus.** (Tab. LXVI.)

Falco deiroleucus, Temm. Pl. Col. 348[1].

Hypotriorchis deiroleucus, Salv. Ibis, 1861, p. 354[2]; P. Z. S. 1870, p. 215[3]; Lawr. Ann. Lyc. N. Y. ix. p. 134[4]; v. Frantz. J. f. Orn. 1869, p. 369[5].

Falco aurantius, Gm. Syst. Nat. i. p. 283 (?)[6]; Sharpe, Cat. Birds Brit. Mus. i. p. 402[7].

Supra niger, plumis dorsi secundariis intimis et tectricibus alarum sordide schistaceo limbatis; remigibus nigris, intus rufo fasciatim maculatis; cauda nigra, albido terminata, fasciis albidis (duabus celatis) quinque notata; pileo toto, facie laterali, regione parotica genisque nigerrimis; colli lateribus et gutture albis, illo aurantiaco-castaneo valde tincto; præpectore præsertim aurantiaco-castaneo, plumarum rhachidibus nigro indicatis; pectore, cum hypochondriis, subalaribus et axillaribus nigris fasciis vel maculis rotundatis albidis aut aurantiacis notatis; abdomine, tibiis et subcaudalibus castaneis, his longioribus nigro distincte transfasicatis. Long. tota 14·5, alæ 11·2, caudæ 4·4, culm. 0·9, tarsi 1·55. (Descr. feminæ ex Guatemala. Mus. nostr.)

♂ feminæ similis, sed minor. Long. tota 15·7, alæ 11·4. (Descr. maris ex Bugaba. Mus. nostr.)

Juv. adultis similis, sed notæi plumis omnibus rufo nec schistaceo limbatis; supracaudalibus albo transfasciatis; rectricibus nigris, albo terminatis et albido 5-fasciatis; facie laterali nigerrima; gutture albo; præpectore rufescente, nigro striolato; corpore reliquo subtus nigro et ochraceo variegato, plumis nigris, ochraceo marginatis et fasciatis, rarius maculatis. Long. tota 15·5, alæ 11·3. (Descr. exempl. ex Costa Rica. Mus. nostr.)

Hab. GUATEMALA, Vera Paz (*Meany* [2]); NICARAGUA, Matagalpa (*Richardson*); COSTA RICA, La Palma (*v. Frantzius* [5], *Zeledon* [4], *Carmiol*); PANAMA, Bugaba (*E. Arcé* [3]). —SOUTH AMERICA to Guiana [7], Venezuela [7], and Brazil [7].

This very rare Falcon is a large form of *F. rufigularis*, and but few specimens are to be found in Museums. In 1860 we secured from Mr. Meany, of Guatemala, a fine adult female, which he obtained in Vera Paz; this specimen, which is figured on our Plate, is the only one known to us from that country. In Costa Rica it is apparently of more frequent occurrence, having been procured by several collectors.

Nothing is known of its habits or breeding.

5. Falco fusco-cærulescens.

Alconcillo aplomado, Azara, Apunt. i. p. 175 [1].

Falco fusco-cærulescens, Vieill. N. Dict. d'Hist. N. xi. p. 90 [2]; Sharpe, Cat. Birds Brit. Mus. i. p. 400 [3]; Sumichrast, La Nat. v. p. 237 [4]; Bendire, Life Hist. N. Amer. Birds, p. 306, pl. x. figs. 9, 10 [5]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 114 [6]; A. O. U. Check-l. N. Amer. Birds, p. 139 [7]; Richmond, Pr. U. S. Nat. Mus. xviii. p. 628 [8].

Falco femoralis, Temm. Pl. Col. tt. 121, 343 [9]; Finsch, Abh. nat. Ver. Bremen, 1870, p. 362 [10].

Hypotriorchis femoralis, Scl. P. Z. S. 1856, p. 285 [11]; 1859, p. 368 [12]; Scl. & Salv. Ibis, 1859, p. 219 [13]; Lawr. Mem. Bost. Soc. N. H. ii. p. 301 [14]; Bull. U. S. Nat. Mus. no. 4, p. 39 [15]; Boucard, P. Z. S. 1883, p. 457 [16].

Pulchre schistaceus, pileo vix saturatiore; fascia supraciliari ferruginea albo mixta in torquem cervicalem extensa; alis dorso concoloribus, primariis intus albo fasciatim notatis, secundariis et primariis intimis albo terminatis; supracaudalibus schistaceis, nigro et albido indistincte fasciatis; cauda schistaceo-nigra, albo terminata et griseo 6-fasciata; regione parotica et gutture albidis rufo lavatis, fascia una schistaceo-nigra suboculari et altera supra regionem paroticam extensa; gutture imo et præpectore pallide castaneo-rufis; pectore toto, hypochondriis axillaribusque schistaceo-nigris, lineis albis transfasciatis; abdomine, tibiis et subcaudalibus pallide castaneo-rufis; subalaribus albis, rufo tinctis, plus minusve nigro maculatis; remigibus infra regulariter albo fasciatis. Long. tota 12·3, alæ 8·9, caudæ 6·2, culm. 0·85, tarsi 1·8. (Descr. maris ex Costa Rica. Mus. Brit.)

♀ mari, ut videtur, similis, sed multo major, et coloribus minus vividis; plaga nigra pectorali anguste nigro transfasciata. Long. tota 18·5, alæ 11·6. (Descr. exempl. ex Corpus Christi, Texas. Mus. nostr.)

Juv. adultis similis, sed notæi plumis brunnescentibus vix rufo marginatis: subtus ochraceus, nigro striolatus, pectoris plumis nigris, haud transfasciatis. (Descr. exempl. ex Veragua. Mus. nostr.)

Hab. North America, Southern Texas, New Mexico, and Arizona [2].—Mexico, Altamira, Tampico (*Armstrong* [8]), Mazatlan, San Blas (*Grayson* [14]), Omealca, Tehuantepec city (*Sumichrast* [4 15]), Vera Cruz (*Sallé* [11]), Jalapa (*De Oca* [12]) Yucatan (*Cabot* [16], *Gaumer* [16]); Guatemala (*Skinner* [13]), San Agustin (*O. S. & F. D. G.*).—South America generally to Patagonia [3].

In the South-western United States this Falcon breeds, and in many districts is not uncommon. Though not unfrequent in Mexico, it is probably only a winter visitor there. In Guatemala we obtained a single specimen at San Agustin. Of the presence of the bird in Nicaragua, Costa Rica, and Panama there is no record. In South America its distribution is very wide, extending as far as Patagonia.

This species is said to be more shy than most of the American Falcons. The food consists of small mammals, birds, and insects. The nest is composed of twigs with a lining of grass, and is placed in a small bush or cactus ten or fifteen feet from the ground; occasionally the old nest of a Crow is utilized.

The eggs, generally three in number, are of a dull yellowish white, thickly sprinkled with red spots and blotches, resembling those of the Gyr-Falcon in the richness of their colour.

6. **Falco columbarius.**

The Pigeon Hawk, Catesby, Nat. Hist. Carolina, i. p. 3, t. 3 [1].

Falco columbarius, Linn. Syst. Nat. i. p. 128 [2]; Sharpe, Cat. Birds Brit. Mus. i. p. 408 [3]; Sumichrast, La Nat. v. p. 237 [4]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 168 [5]; Ridgw. Pr. U. S. Nat. Mus. x. p. 577 [6]; Herrera, La Nat. (2) i. pp. 176, 320 [7]; Cherrie, Auk, 1892, p. 328 [8]; Bendire, Life Hist. N. Amer. Birds, i. p. 298, t. 10. figs. 4, 8 [9]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 109, t. 16 [10]; Allen, Bull. Amer. Mus. Nat. Hist. v. p. 34 [11]; A. O. U. Check-l. N. Amer. Birds, p. 138 [12]; Nelson, N. Amer. Fauna, no. 14, p. 38 [13].

Hypotriorchis columbarius, Lawr. Ann. Lyc. N. Y. ix. p. 134 [14]; Mem. Bost. Soc. N. H. ii. p. 300 [15]; v. Frantz. J. f. Orn. 1869, p. 369 [16]; Salv. P. Z. S. 1870, p. 215 [17]; Ibis, 1889, p. 375 [18]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 269 [19].

Supra clare cinereus, plumarum rachidibus nigris valde indicatis; pileo et interscapulio dorso concoloribus, sed nigro latius striatis; torque cervicali interrupto albo rufoque mixto; remigibus nigris, intus grisescenti-albo fasciatim notatis; cauda clare cinerea, albo terminata, fasciis nigris plus minusve interruptis notata, fascia subterminali latissima; loris et striga superciliari albidis, nigro striolatis; facie laterali et regione parotica fulvidis, nigro distincte lineolatis; gutture albo, vix nigro striolato; collo laterali et corpore subtus reliquo rufescentibus, plumis medialiter nigro striatis; hypochondriis brunneis, maculis albis ovalibus notatis; abdomine tibiisque rufescentioribus, nigro striolatis; subcaudalibus rufescenti tinctis, sed clare cinereo lavatis et medialiter nigro striatis; subalaribus albis, pallide brunneo transfasciatis. Long. tota circa 11·0, alæ 7·7, caudæ 4·7, culm. 0·7, tarsi 1·4. (Descr. maris ex Ins. Ruatan. Mus. nostr.)

♀ mari similis, sed ubique saturatior: supra brunnescentior, minime schistaceus; facie laterali sordide brunnea: subtus fulvescenti-albus, gutture maculis sagittiformibus ornato; gastræo reliquo ochrascent, plumis medialiter late brunneo striolatis; hypochondriis maculis albis ovatis notatis; rectricibus centralibus fere concoloribus, reliquis autem rufescenti fasciatim maculatis. Long. tota circa 11·5, alæ 8·4, caudæ 5·1, culm. 0·7, tarsi 1·4. (Descr. feminæ ex Walla Walla. Mus. nostr.)

Juv. feminæ adultæ similis sed nigricans, et striis gastræi plumarum medianis quoque nigricantibus. Long. tota 11·8, alæ 7·6. (Descr. maris ex Hermosillo, Sonora. Mus. nostr.)

Hab. North America generally, breeding north of the United States [12].—Mexico, Hermosillo in Sonora, Puebla, Chietla [5] (*Ferrari-Perez*), San Diego (*Robinette* [11]), Presidio de Mazatlan (*Forrer*), Mazatlan [15], Tres Marias Is. [18], Tepic [15] (*Grayson*), Plains of Colima (*Richardson*), Valley of Mexico (*Sumichrast* [4], *Herrera* [7]), Tehuacan, Orizaba (*Sumichrast* [4]), Mugeres I., Cozumel I. (*Gaumer* [18]); Honduras, Ruatan I. (*Gaumer* [15]); Nicaragua, Chinandega (*U. S. Nat. Mus.*); Costa Rica (*v. Frantzius* [16]), San José (*Carmiol* [14], *Cherrie* [8]); Panama, Chiriqui, Calobre (*Arcé* [17]), Lion Hill (*M'Leannan*).—Colombia [3]; Venezuela [3]; Antilles, Swan I.[6]

The North-American Merlin is a migrant throughout the whole of Central America, and has been captured in many parts of Mexico, as may be seen by the above list of localities. From the more southern States it has been less frequently recorded, but Grayson found the species common in Western Mexico. Specimens have been met with in the Tres Marias Islands, but it seems probable that the bird is only a straggler there [13]. We have no example from Guatemala, and Mr. Cherrie records but one from Costa Rica. Grayson [15] says that at Tepic he observed one of these Merlins daily perched on the top of a tree growing in the plaza, where it preyed on the numerous small "Cow-pen-Blackbirds," returning to the tree from time to time to leisurely devour its victim. Between eight and twelve o'clock in the morning he noticed one kill no less than three of these birds. The species remained in the same locality from November to January.

This Merlin breeds in the northern parts of North America, but is found on the mountains further south.

In the winter *F. columbarius* often migrates in considerable flocks, and is destructive to many kinds of small birds, but it also attacks Pigeons, and occasionally carries off chickens. According to Dr. A. K. Fisher, its food also comprises small mammalia and insects, such as crickets, dragonflies, beetles, &c.

The nest is generally placed on ledges or in cavities of cliffs, but occasionally the bird will build a somewhat bulky nest in a tree. The eggs vary from four to six in number; they are rich reddish-brown, with blotches of vinous or chestnut-brown, entirely concealing the creamy-white ground-colour.

7. Falco richardsoni.

Falco æsalon, Swains. Faun. Bor.-Am., Birds, t. 25 (nec Tunst.)[1].

Falco (*Hypotriorchis*) *richardsonii,* Ridgw. Pr. Ac. Phil. 1870, p. 145 [2].

Falco (*Æsalon*) *lithofalco,* var. *richardsoni,* Baird, Brew., & Ridgw. N. Am. Birds, iii. p. 148 [3].

Falco richardsonii, Ridgw. Man. N. Amer. Birds, ed. 2, p. 251 [4]; Bendire, Life Hist. N. Amer. Birds, i. p. 303 [5]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 114 [6]; A. O. U. Check-l. N. Amer. Birds, p. 139 [7].

F. columbario similis, sed ubique pallidior; margaritaceo-griseus; fronte, supercilio et facie laterali albis, anguste nigro striolatis: subtus ochrascens, haud rufo tinctus, et plumis medialiter brunneo striatis. Long. tota circa 11·5, alæ 7·9, caudæ 4·55, culm. 0·65, tarsi 1·5. (Descr. maris ex Hermosillo, Sonora. Mus. nostr.)

♀. *F. columbarii* ♀ similis, sed ubique pallidior. Long. tota circa 12·0, alæ 8·8. (Descr. feminæ ex Colorado. Mus. Brit.)

Hab. North America, interior and western Plains from the Mississippi Valley to the Pacific coast, and from Texas and Arizona north to the Saskatchewan [7].—Mexico, Hermosillo in Sonora (*Ferrari-Perez*).

This pale and apparently well-marked form of Merlin has been correctly surmised by American ornithologists as likely to occur in Mexico. We possess a fine adult male specimen procured by Señor Ferrari-Perez at Hermosillo, in Sonora, on the 21st of November, 1887; this is the only example hitherto recorded from Central America.

TINNUNCULUS.

Tinnunculus, Vieillot, Ois. Am. Sept. i. p. 39 (1807), et auctt.
Cerchneis, Boie, Isis, 1826, p. 970; Sharpe, Cat. Birds Brit. Mus. i. p. 423.

The genus *Tinnunculus* includes a number of small species which differ from the true Falcons in the proportion of their toes, the outer and inner ones being nearly equal in length and considerably shorter than the middle toe. There is but little difference in the size of the sexes, a distinguishing mark in the Falconidæ, where the female is usually by far the larger bird. In the majority of the Kestrels the sexes differ in colour, the male being handsomer than the female; this is certainly the case with American forms, but in some of the Old World members of the genus they are alike in colour and size, and in the African species, *T. rupicoloides* and *T. fieldi*, the plumage is identical. Admitting *T. sparverius* as the type of the American Kestrels, it must be allowed that several races existing in the Neotropical region are worthy of definition; but the characters insisted upon by Dr. Bowdler Sharpe, in his 'Catalogue of Birds,' and by other modern writers, must, in our opinion, now be revised, too much stress having been laid on the presence or absence of a rufous patch on the head and also on the amount of spotting of the underparts. In the North-American *T. sparverius*, which is the only species occurring within our limits, and which can be separated from its South-American representatives, the rufous patch on the crown is frequently absent.

1. Tinnunculus sparverius.

The Little Hawk, Catesby, Nat. Hist. Carol. i. p. 5, t. 5 [1].
Falco sparverius, Linn. Syst. Nat. i. p. 128 [2]; Licht. Preis-Verz. Mex. Vög. p. 3 [3]; Cab. J. f. Orn. 1863, p. 58 [4]; Wagler, Isis, 1831, p. 517 [5]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 168 [6]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [7]; Herrera, La Nat. (2) i. pp. 176 [8], 320 [9];

Stone, Pr. Acad. Phil. 1890, pp. 205 [10], 214 [11]; Cherrie, Auk, 1892, p. 328 [12]; Richm. Pr. U. S. Nat. Mus. xvi. p. 520 [13]; Bendire, Life Hist. N. Amer. Birds, i. p. 309, t. 10. figs. 11–16 [14]; Fisher, Bull. U. S. Dep. Agr. no. 3, p. 115, t. 17 [15]; A. O. U. Check-l. N. Amer. Birds, p. 140 [16]; Underwood, Ibis, 1896, p. 446 [17]; Chapman, Bull. Amer. Mus. N. H. viii. p. 286 [18]; Nelson, N. Amer. Fauna, no. 14, p. 38 [19].

Tinnunculus sparverius, Scl. P. Z. S. 1856, p. 284 [20]; 1858, pp. 295 [21], 357 [22]; 1859, pp. 368 [23], 390 [24]; 1864, p. 178 [25]; Moore, P. Z. S. 1859, p. 52 [26]; Scl. & Salv. Ibis, 1859, p. 219 [27]; P. Z. S. 1870, p. 838 [28]; Dugès, La Nat. i. p. 138 [29]; Salvin, P. Z. S. 1867, p. 158 [30]; 1870, p. 215 [31]; Ibis, 1872, p. 323 [32]; Cat. Strickl. Coll. p. 503 [33]; Lawr. Ann. Lyc. N. Y. ix. pp. 134 [34], 207 [35]; Mem. Bost. Soc. N. H. ii. p. 301 [36]; Bull. U. S. Nat. Mus. no. 4, p. 39 [37]; v. Frantz. J. f. Orn. 1869, p. 369 [38]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 269 [39]; Nutting, Pr. U. S. Nat. Mus. v. p. 403 [40]; vi. pp. 377 [41], 388 [42]; Ridgw. Pr. U. S. Nat. Mus. v. pp. 498 [43], 502 [44]; Boucard, P. Z. S. 1883, p. 457 [45].

Cerchneis sparveria, Sharpe, Cat. Birds Brit. Mus. i. p. 437 [46]; Boucard, P. Z. S. 1878, p. 45 [47]; Sumichr. La Nat. v. p. 237 [48].

Falco sparverius deserticolus, Mearns, Auk, 1892, p. 263 [49]; Allen, Bull. Amer. Mus. N. H. v. p. 34 [50].

Cerchneis deserticola, Sharpe, Hand-l. Birds, i. p. 278 [51].

Supra cinnamomeus, dorsi plumis paucis nigro transfasciatis, scapularibus cinereo apicem versus adumbratis; tectricibus alarum pulchre schistaceis, maculis nigris cordiformibus ornatis; tectricibus primariorum schistaceis, nigro transfasciatis; remigibus nigricantibus, intus late albo fasciatis; secundariis pulchre schistaceis, basin versus nigris et intus albo fasciatim notatis; dorso postico, uropygio, supracaudalibus caudaque cinnamomeis, hac albo terminata, fascia lata subterminali nigra; pileo pulchre schistaceo, macula magna verticali cinnamomea vel pallide castanea; loris et fronte basali, cum supercilio angusto, albidis; regione oculari et fascia mystacali nigris; facie laterali reliqua alba, regione parotica nigro circumdata; gutture albido; corpore reliquo subtus pallide cinnamomeo, pectore et hypochondriis maculis ovalibus nigris notatis; tibiis et subcaudalibus pallidioribus, lactescenti-albis, immaculatis; subalaribus albis, nigro maculatis: rostro cyanescente, apice nigro; cera flava; pedibus flavis, unguibus nigris; iride brunnea. Long. tota circa 10·5, alæ 7·7, caudæ 4·95, culm. 0·6, tarsi 1·45. (Descr. maris ex fl. Salado, Nuevo Leon. Mus. nostr.)

♀ mari dissimilis. Supra sordide cinnamomeus, sed ubique schistaceo-fusco transfasciatus; tectricibus primariorum secundariisque maculis cinnamomeis fasciatim notatis; primariis nigricantibus, cinnamomeo vel rufescenti-albido intus triquetrim notatis; supracaudalibus rectricibusque cinnamomeis, schistaceo-nigro transfasciatis, fascia subterminali latiore; pileo et facie laterali ut in mari picturatis; gutture albo; gastræo reliquo pallide cinnamomeo-brunneo, plumis late albido marginatis vel maculis ovalibus albidis notatis vel fasciatis; tibiis et subcaudalibus albidis fere immaculatis; subalaribus et axillaribus pectoris concoloribus. Long. tota circa 11·5, alæ 7·7, caudæ 4·8, culm. 0·6, tarsi 1·4. (Descr. feminæ ex Oaxaca. Mus. nostr.)

Hab. North America, east of the Rocky Mountains, and from the Great Slave Lake south to Northern South America (*T. sparverius*), Western United States, north to Eastern British Columbia and Western Montana, south to Mazatlan in North-western Mexico (*T. deserticolus*) [16]. — Mexico (*Deppe & Schiede* [3], *Wagler* [5]), Pachico, Granados, Nacori (*Robinette* [50]), Tutuaca, Chihuahua 9600 feet, Santa Isabel, El Toro (*Lloyd*), Mazatlan (*Grayson* [36], *Forrer*), Tres Marias Islands (*Grayson* [36 39], *Forrer*, *Nelson* [19]), Aldama, Tamaulipas, Tamesi, Plains of San Luis Potosi, Ajusco, Zacatecas, Aguas Calientes, Bolaños (*Richardson*), Santana

near Guadalajara (*Lloyd*), Sierra Madre del Sur (*Mrs. H. H. Smith*), Tehuantepec (*Sumichrast*[37], *Richardson*), Valley of Mexico (*Herrera*[8 9], *Le Strange*), city of Mexico (*White*[25]), Mexicalcingo, Culhuacan, Chimalpa, Ixtapalapa (*Ferrari-Perez*), Topo Chico, Rio Salado, Nuevo Leon, Nuevo Laredo, Altamira, Tampico (*Armstrong*), Hermosillo in Sonora, Huexotitla, Chietla[6], Chachapa, Puebla[6], Naulingo, Puente, San Baltazar, Santo Domingo (*Ferrari-Perez*), Jalapa (*de Oca*[23]), Las Vigas, Las Posadas, Hacienda Tortugas, Rio Rancho Nuevo, Santana, Rio de San Juan, Orizaba (*Ferrari-Perez*), Totontepec, Juchatingo, Coatepec, Cofre de Perote (*M. Trujillo*), Oaxaca, La Parada[21], Villa Alta[24] (*Boucard*), Misantla, Atlixco, Patzcuaro, Tabi in Yucatan (*F. D. G.*), Cordova (*Sallé*[20]), Chalchicomula, Volcan de Orizaba, Popocatepetl[11], Ixtaccihuatl[11], Izamal[10], Progreso[10] (*Stone & Baker*[11]), N. Yucatan (*Gaumer*[45]), Merida (*Schott*[35]), Chichén Itzá (*Chapman*[18]); British Honduras, Orange Walk, Belize (*Blancaneaux*); Guatemala (*Constancia*[33]), Coban, Volcan de Agua above San Diego, San Gerónimo, Tactic, Iguana, Motagua Valley, Dueñas (*O. S. & F. D. G.*[27]); Honduras, Omoa (*Leyland*[26]), San Pedro (*Whitely*[28]), Tigré Island, Bay of Fonseca (*Taylor*[22]); Nicaragua, Chontales (*Belt*[32]), La Libertad, San Rafael del Norte, Leon (*Richardson*), Rio Escondido (*Richmond*[13]), San Juan del Sur[41], Sucuyá[42] (*Nutting*); Costa Rica (*v. Frantzius*[38], *Boucard*[47]), San José (*Carmiol*[34], *Nutting*[44], *Cherrie*[12]), Orosi (*Kramer*), Alajuela, Cartago (*Zeledon*[7]), Reventazon, Jiménez, Talamanca, Miravalles[17], Juan Viñas (*Underwood*), Irazu (*Rogers, Nutting*[43]), La Palma, Gulf of Nicoya (*Nutting*[40]); Panama, Santa Fé, Calobre, Volcan de Chiriqui (*E. Arcé*[30 31]).

In a paper on *Tinnunculus sparverius* and its allies by Mr. Edgar Mearns[49], the author recognizes an eastern and a western form, the latter being separated by him as *T. deserticolus*. The characters for the separation of *T. deserticolus* depend chiefly upon the plumage of the female, the male presenting no definite peculiarities. While acknowledging that specimens from Western North America differ as regards the barring of the tail and some unimportant characters, we have in our collection eastern birds, and others, more or less intermediate, which cannot be distinguished from the western form. The range of *T. deserticolus* has been traced by Mr. Mearns to Mazatlan[49], and by Prof. Allen to Sonora[50], and we have specimens from Guatemala and Nicaragua which appear to be likewise referable to this western race.

With the exception of the Arctic portions of the North-American continent, this Kestrel is distributed in summer over the greater part of the United States and Canada, being most plentiful in the western and southern regions. According to Grayson[39], *T. sparverius* probably breeds also in certain portions of Central America; we ourselves found the species generally distributed in Guatemala, where we believed it to be migratory; but in Mexico, &c., Sumichrast, Richmond, Cherrie, and other good observers record the bird as a winter visitant only. On Popocatepetl and Ixtaccihuatl

Mr. Witmer Stone met with specimens up to an elevation of 10,000 feet. Grayson records the species from the Tres Marias Islands, but Mr. Nelson did not observe it there. Dugès[29] and Sumichrast[48] state that *T. sparverius* is generally distributed in Mexico between October and April.

In habits the American Kestrel resembles its European congener, and frequently hovers in the air when in search of prey. Its food consists principally of insects, especially grasshoppers, also small rodents, lizards, &c.; but during the stress of the breeding-season, and in severe winters in more northern localities, when insect-food fails, it occasionally kills birds.

In the absence of trees, the clefts and ledges of rocks are inhabited for breeding-purposes, but, where trees exist, the hollows formerly frequented by Woodpeckers are often used; occasionally, however, fresh nests composed of twigs and leaves are built[14]; it is but seldom that those deserted by other birds are utilized, as is the case with its European ally.

The eggs are usually four or five in number, though seven have been found; they vary from cream-colour to bright cinnamon, and also in the intensity and distribution of the brown or rufous markings[14 15].

Subfam. *POLYBORINÆ*.

This is another purely American subfamily of Falconidæ, with some affinity to the Falconinæ, but also with wide differences of structure and habits. Most of the genera belong to South America, some of them spreading as far north as Guatemala, *Polyborus* itself ranging into the Southern States of the Northern Continent.

Mr. Ridgway, in his 'Systematic Analysis of the Falconidæ,' defined four genera of Polyborinæ, dividing *Phalcobœnus* and *Ibycter* each into two subgenera. From his differential characters we select the following:—"Posterior toe abbreviated, very much shorter than the lateral pair; tarsi and toes covered with small hexagonal scales, larger in front. Nostril small, round or oblique, with a bony-rimmed margin and central tubercle. Tomia with or without a small tooth or notch. Superciliary process of the lachrymal abbreviated, reaching only halfway across the orbit. Posterior margin of the sternum with a pair of deep indentations. Three or more outer primaries sinuated near the middle portion."

POLYBORUS.

Polyborus, Vieillot, Anal. p. 22 (1816); Sharpe, Cat. Birds Brit. Mus. i. p. 31; Ridgw. Bull. U. S. Geol. & Geogr. Surv. i. pp. 451–460 (1876).

Following Mr. Ridgway's classification, we find that *Polyborus* can be separated from the other Central-American genera of Caracaras (viz. *Milvago* and *Ibycter*) by certain well-ascertained characters. The proportions of the tarsus and the middle toe, and

the arboreal habits, distinguish *Ibycter*; and the linear nostril and the form of the cere, which is described as "vertical in outline and nearly straight," are said to separate *Polyborus* from *Milvago*.

Two well-defined species of *Polyborus* are known, viz.: *P. tharus* (Molina), which inhabits the greater part of South America, and is replaced in the northern portions of the latter Continent, and throughout Central America even to the Southern United States, by *P. cheriway* (Jacq.); two closely allied forms of the latter have been treated as distinct—*P. lutosus*, Ridgw., of the island of Guadalupe, off Lower California, and *P. pallidus*, Nelson, of the Tres Marias Islands.

The *Polybori* are all terrestrial in their habits, usually frequenting open plains, and feeding largely on carrion, like the Turkey Vultures, with which they often associate. They are generally known by the name of "Caracara," but in Central America the natives call them "Quebra'-hueso" * (bone-breaker).

1. Polyborus cheriway.

Falco cheriway, Jacq. Beitr. p. 17, t. 4 [1].

Polyborus cheriway, Cab. in Schomb. Reis. Guiana, iii. p. 741 [2]; Sharpe, Cat. Birds Brit. Mus. i. p. 33 [3]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. i. p. 457 [4]; Sumichrast, La Nat. v. p. 235 [5]; Salv. Cat. Strickl. Cat. p. 509 [6]; Boucard, P. Z. S. 1883, p. 457 [7]; Belding, Pr. U. S. Nat. Mus. vi. p. 344 [8]; Nutting, Pr. U. S. Nat. Mus. vi. pp. 377 [9], 389 [10]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 168 [11]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [12]; Herrera, La Nat. (2) i. pp. 177, 320 [13]; Bendire, Life Hist. N. Amer. Birds, i. p. 315 [14]; Fisher, Bull. U. S. Dep. Agric. no. 3, p. 128 [15]; Cherrie, Auk, 1892, p. 328 [16]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 788 [17]; Chapman, Bull. Amer. Mus. Nat. Hist. x. p. 35 [18].

Polyborus brasiliensis, Sw. Phil. Mag. new ser. i. p. 366 (nec Gm.) [19].

Falco plancus, Wagl. Isis, 1831, p. 516 (nec Gm.) [20].

Polyborus tharus, Scl. P. Z. S. 1857, p. 211 (nec Molina) [21]; 1859, p. 368 [22]; Scl. & Salv. Ibis, 1859, p. 214 [23]; P. Z. S. 1870, p. 838 [24]; Owen, Ibis, 1861, p. 67 [25].

Polyborus audubonii, Cassin, Pr. Ac. Phil. 1865, p. 2 [26]; Lawr. Ann. Lyc. N. Y. ix. pp. 132 [27], 207 [28]; v. Frantz. J. f. Orn. 1869, p. 367 [29]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 268 (pt.) [30].

Polyborus tharus, var. *audubonii*, Lawr. Mem. Bost. Soc. N. H. ii. p. 303 (pt.) [31]; Bull. U. S. Nat. Mus. no. 4, p. 43 [32].

Polyborus vulgaris, Dugès, La Nat. i. p. 138 [33] (nec Spix).

Nigricans; pilei plumis cristatis lanceolatis; interscapulii plumis extus albido regulariter fasciatis; torque cervicali lactescenti-albo, maculis vel fasciis parvis nigris notato; supracaudalibus medianis uropygio concoloribus, lateralibus autem albis, vix nigro fasciatis; rectricibus albidis, brunneo vel nigro transfasciatis, et apicem versus nigricantibus, fasciam latam terminalem formantibus; externis vero nigricantibus, vel albo late indentatis; remigibus nigricantibus, primariis longioribus in medio grisescentibus, irregulariter brunneo marmoratis vel fasciatim notatis: subtus nigricans, facie laterali et gutture toto cum colli lateribus lactescenti-albis; præpectore et pectore summo ochrascentibus, nigro cordatim fasciatis; abdomine imo, crisso et subcaudalibus ochrascenti-albis; subalaribus et axillaribus nigricantibus: rostro flavicante, mandibula plumbescente, cera et regione orbitali læte aurantiacis; pedibus flavis; iride flava.

* "Quebrantahuesos," according to Sumichrast.

Long. tota circa 22·5, alæ 16·2, caudæ 8·9, culm. cum cera 1·9, tarsi 3·6. (Descr. maris ex Corpus Christi, Texas. Mus. nostr.)

♀ *ad.* mari similis. Long. tota circa 21·5, alæ 15·2.

Juv. Brunneus, interscapulii plumis et tectricibus alarum albido medialiter striatis et saturate brunneo apicem versus lineatis; remigibus et rectricibus fere ut in adultis coloratis; facie laterali et gutture toto ochrascenti-fulvis; plaga pectorali rufescente, plumis longitudinaliter fulvo striatis; corpore reliquo subtus rufescenti-brunneo, rufo lætius striolato; abdomine albo et subcaudalibus quoque albis. (Descr. exempl. juv. ex San Antonio, Texas. Mus. nostr.)

Pull. duvedine fusco indutus, subtus magis cinerascens; area alari et hypochondriarum lateribus saturate brunneis; collo undique cum regione scapulari et gutture toto cervinis. (Descr. exempl. ex Mazatlan. Mus. nostr.)

Hab. North America, Southern States from Florida to Texas and Lower California.—Mexico (*Bullock* [19]), Hot and temperate regions of both Coasts (*Sumichrast* [5]), Guaymas (*Belding* [8]), Presidio de Mazatlan (*Forrer*), Mazatlan (*Bischoff* [4], *Grayson* [31]), Hacienda Angostura in San Luis Potosi, Jalisco (*Jouy* [17]), Guanajuato, Guadalajara (*Dugès* [33]), Santana near Zapotlan (*Lloyd*), Colima (*Xantus* [31]), Mirador (*Sartorius* [4]), Zacatecas, Tampico (*Richardson*), Monterey (*Couch* [4]), Valley of Mexico (*Herrera* [13]), Jalapa (*de Oca* [22], *Chapman* [18]), Orizaba (*Botteri* [21]), Llano de San Baltazar [11], Parada (*Ferrari-Perez*), Merida in Yucatan (*Schott* [28], *Salazar* [4], *Gaumer*), Izamal (*Gaumer*); Guatemala (*Constancia* [6]), Dueñas [23], Escuintla, San José de Guatemala (*O. S. & F. D. G.*), San Gerónimo (*Owen* [25]); Honduras, San Pedro (*Whitely* [24]); Nicaragua, Chinandega (*Hopkins, in U. S. Nat. Mus.* [4]), San Juan del Sur [9], Sucuyá [10] (*Nutting*); Costa Rica (*v. Frantzius* [29]), San José (*Carmiol* [27], *Cherrie* [16]), Alajuela (*Zeledon* [12]).—South America, northern portion from Ecuador [3] to Guiana [2].

This species breeds in the Southern United States and throughout the greater part of Mexico, Guatemala, and Nicaragua; but in Yucatan, according to Gaumer [7], it is somewhat scarce, and though also found in Costa Rica, we have no record of its breeding there.

In many of its habits, *P. cheriway* resembles the Turkey Vultures, and, like the latter, is a useful scavenger, devouring offal and carrion, also eating lizards, snakes, birds, frogs, crabs, small rodents, and sometimes pursuing full-grown hares. The bird runs rapidly and strikes its prey with its feet, after the manner of a Cariama or a Secretary-bird [15]. When in search of food, the Caracara is by no means shy, but at other times is difficult of approach. It has a powerful flight and will often attack birds larger than itself, occasionally even forcing Pelicans to disgorge their prey.

The nest, composed of twigs, reeds, and coarse grass, lined with leaves, cotton, and moss, and having a small cavity, is placed in low bushes on the bare plains, or in other localities in trees at a height of forty or fifty feet from the ground. Bendire records that the eggs, varying from three to five in number, are laid at intervals of several days, and according to locality, from February to April; their ground-colour is white, overlaid with rufous and spotted or blotched with brown and purple.

A good account of the nesting of this species in Mexico has been given by Grayson [31] and in Guatemala by Robert Owen [25].

2. **Polyborus pallidus.**

Polyborus audubonii (nec Cass.), Grayson, Pr. Boston Soc. Nat. Hist. xiv. p. 268 [1].
Polyborus tharus, var. *audubonii* (pt.) (nec Cass.), Lawr. Mem. Boston Soc. Nat. Hist. ii. p. 303 [2].
Polyborus cheriway pallidus, Nelson, Proc. Biol. Soc. Washington, xii. p. 8 [3]; N. Amer. Fauna, no. 14, p. 38 [4].
Polyborus pallidus, Sharpe, Hand-l. Birds, i. p. 243 [5].

P. cheriway similis, vix minor, sed ubique pallidior (teste Nelson, *l. c.*).

Hab. Mexico, Tres Marias Is. (*Grayson* [1] [2], *Nelson* [3] [4]).

Grayson was the first to record the presence of a Caracara on the Tres Marias Islands [1], and the specimens he obtained were referred by Lawrence [2] to *P. cheriway*, the species which inhabits the adjacent mainland of Central America. Mr. Nelson, however, has drawn attention to the differences exhibited by the insular form, and named it *P. cheriway pallidus*. He says that the bird was abundant about the settlement on Maria Madre, where the log-roads and dry bottoms of the cañons were favourite resorts. It was also found perched on tree-tops in the midst of unbroken forest, and was commonly distributed over the other islands, including San Juanito. Iguanas were very plentiful and formed the chief food, but the Caracaras readily devoured any carrion obtainable [4].

MILVAGO.

Milvago, Spix, Av. Bras. i. p. 12 (1824); Ridgw. Bull. U. S. Geol. & Geogr. Surv. i. p. 466 (1878).
Ibycter, partim, Sharpe, Cat. Birds Brit. Mus. i. p. 34 (1874).

The genus *Milvago* is associated with *Polyborus* by Mr. Ridgway, its habits being "chiefly terrestrial." The tarsus is much longer than the middle toe, but the outer toe is decidedly longer than the inner; the posterior one does not reach the first joint of the middle toe; claws sharp, as in the Falcons; posterior face of the tarsus with two distinct rows of quadrate scales; nostril circular, in the middle of the cere, its tubercle exposed; anterior outline of the cere doubly curved; tooth and notch of the tomia of the bill distinctly indicated; lower jaw normally feathered.

Two species are known: *M. chimango*, inhabiting South America from Tierra del Fuego to Buenos Ayres, and on the west to Peru; and *M. chimachima*, extending over Tropical America as far north as Panama.

1. **Milvago chimachima.**

Chimachima, Azara, Apunt. i. 50 [1].
Polyborus chimachima, Vieill. N. Dict. d'Hist. N. v. p. 259 [2].

Milvago chimachima, Salv. P. Z. S. 1870, p. 214[3]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. i. p. 468[4].

Ibycter chimachima, Sharpe, Cat. Birds Brit. Mus. i. p. 39[5].

Supra saturate brunneus, notæi plumis vix griseo vel grisescenti-albo marginatis; supracaudalibus medianis brunneo et ochraceo late regulariter transfasciatis, lateralibus ochraceis, haud fasciatis; rectricibus ochraceis, brunneo 7-transfasciatis et fascia lata brunnea subterminali ornatis; remigibus brunneis, tectricibus primariorum grisescenti-albo terminatis; primariis extus versus basin grisescentibus, brunneo marmoratis, intus ochraceo indentatis; pileo cristato et cervice toto ochraceis, fascia angusta supra-auriculari nigra; facie laterali et corpore subtus toto cum subalaribus et axillaribus ochraceis; tectricibus primariorum inferioribus brunneis vel brunneo fasciatis: rostro cyanescenti-albo, ad apicem albo; cera, loris et palpebris aurantiaco-flavis; pedibus plumbeis; iride griseo-brunnea. Long. tota circa 15·5, alæ 11·0, caudæ 7·6, culm. 1·05, tarsi 1·95. (Descr. exempl. ex Calobre. Mus. nostr.)

Juv. Brunneus, pileo et cervice dorso concoloribus et minute ochraceo striolatis; facie laterali brunnea: subtus brunneus, plumis omnibus triangulariter ochraceo vel ochrascenti-albo notatis; pectore et hypochondriis brunneo et ochraceo transfasciatis; abdomine imo et subcaudalibus ochraceis concoloribus. (Descr. exempl. juv. ex Matto Grosso. Mus. nostr.)

Hab. Panama, Calobre, Chepo (*E. Arcé*[3 4]), Bay of Panama (*Kellett & Wood*[5]).—South America from Colombia to Paraguay[1 5].

This is a common South-American Hawk, and extends northward to Colombia and thence to the Isthmus of Panama[4 5]. Kellett and Wood procured a specimen many years ago in the Bay of Panama, and Arcé sent us examples from Chepo and Calobre[3].

Naturalists who have travelled in South America state that it has the same habits as *Polyborus.*

IBYCTER.

Ibycter, Vieillot, Anal. p. 22 (1816); Sharpe, Cat. Birds Brit. Mus. i. p. 34 (1874); Ridgw. Bull. U. S. Geol. & Geogr. Surv. i. p. 469 (1876).

Ibycter, as defined by Mr. Ridgway, differs from *Polyborus* and *Milvago* in the following characters:—"Tarsus scarcely longer than the middle toe; outer toe very much longer than the inner one, which is but little longer than the posterior toe; inner webs of primaries slightly sinuate; nostril circular, situated near the middle of the cere, its tubercle either concealed or exposed; anterior outline of the cere doubly curved; tarsus without transverse scutellæ either in front or behind. Habits strictly arboreal."

Two species are recognized: *I. americanus,* which inhabits the greater part of South and Central America, and *I. ater,* which is confined entirely to the South-American Continent. The latter is a small species, with a thicker and somewhat differently shaped bill, and a more broadly defined bare eyebrow.

Mr. Ridgway refers *I. ater* to a separate subgenus, *Daptrius.*

1. Ibycter americanus.

Aigle d'Amérique, Buff. Pl. Enl. 417[1].

Red-throated Falcon, Lath. Gen. Syn. i. p. 97[2].

Falco americanus, Bodd. Tabl. Pl. Enl. p. 25 [3].

Ibycter americanus, Scl. & Salv. Ibis, 1859, p. 214 [4]; P. Z. S. 1864, p. 368 [5]; 1870, p. 838 [6]; Taylor, Ibis, 1860, p. 223 [7]; Lawr. Ann. Lyc. N. Y. vii. p. 288 [8]; ix. p. 132 [9]; v. Frantz. J. f. Orn. 1869, p. 367 [10]; Salv. P. Z. S. 1870, p. 214 [11]; Cat. Strickl. Coll. p. 508 [12]; Sharpe, Cat. Birds Brit. Mus. i. p. 35 [13]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. i. p. 470 [14]; Nutting, Pr. U. S. Nat. Mus. vi. p. 408 [15]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 125 [16].

Falco aquilinus, Gm. Syst. Nat. i. p. 280 [17].

Ibycter aquilinus, Cassin, Pr. Ac. Phil. 1860, p. 133 [18].

Niger, chalybeo nitens; pileo cristato: subtus quoque niger, pectore imo et abdomine, tibiis et subcaudalibus albis; subalaribus nigris: rostro flavo; cera pallide plumbea; mento vix plumato, læte aurantiaco; palpebris nudis saturate aurantiacis; pedibus saturate aurantiacis, unguibus nigris; iride aurantiaca. Long. tota circa 21·5, alæ 15·1, caudæ 10·0, culm. (cum cera) 1·45, tarsi 2·2. (Descr. maris ex Savana Grande. Mus. nostr.)

♀ haud a mari distinguenda; pectoris lateribus paullulum albo mixtis. Long. tota circa 22·0, alæ 15·3. (Descr. feminæ ex Savana Grande. Mus. nostr.)

Hab. Guatemala (*Constancia* [12]), Pacific coast-region [4], Savana Grande (*O. S. & F. D. G.*), Retalhuleu (*Richardson*); Honduras, San Pedro (*Whitely* [6]), Taulevi (*Taylor* [7]); Nicaragua, Los Sábalos (*Nutting* [15]); Costa Rica, San José (*Calleja* [14], *Carmiol* [9]), Peje (*Carmiol*), Guaitil, Guanacaste (*v. Frantzius* [10]), Jiménez, Tacares de Alajuela, Pozo Azul de Pirris (*Zeledon* [16]), Talamanca (*Gabb* [14]); Panama, Chiriqui, Mina de Chorcha (*E. Arcé* [11]), Lion Hill (*M'Leannan* [5 8]), Turbo (*Wood* [18]).—Tropical South America.

This species is well known as an inhabitant of Tropical South America, and ranges as far north as Guatemala. Here we found it on the Pacific coast, to the forests of which the bird is apparently confined. It frequently occurs in collections from Costa Rica and Panama, but Mr. Nutting procured only one specimen in Nicaragua. On the Isthmus of Panama, Lieut. Wood found the species abundant in the neighbourhood of Turbo, though less numerous in the interior; he remarks that it is always seen in trees.

This bird utters a very disagreeable note, which we have frequently heard in the dense tropical forests of Guatemala: it may be well expressed by the word "cacao," uttered with the first syllable reiterated several times. The cry is emitted by the bird when sitting on a branch, and the tail is expanded with a jerk on the utterance of each note. The species may be generally observed in pairs, seldom singly, though sometimes several individuals are seen in company.

The late George Cavendish Taylor [7] relates an amusing experience of this Hawk in Honduras. He calls it the "Curassow" Hawk, from its similarity to these game-birds, both in appearance and flight. Late one evening, as he was returning to his home in Taulevi, his companion pointed out five black birds sitting on a tree, and after much trouble in reaching the spot he killed one of them. Without waiting to pick it up he pressed on through the jungle, and stalked the other birds, securing three out of

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the remaining four. As he went to retrieve such a welcome addition to the pot, then in need of supplies, he was disgusted to find that he had killed four of these Hawks, instead of the game-birds. He concludes:—"When dead they still much resembled Curassows, but were Hawks nevertheless."

The colour of the soft parts must vary in this species; those given above are from Mr. Taylor's note, but Mr. Nutting describes his Nicaraguan specimen as follows:—"Iris red; bill in front of cere greenish-yellow, basal half clear light blue; bare part of head deep red; feet coral-red."

Fam. SARCORHAMPHIDÆ.

The members of this family, which includes the South-American Condor and the King and Turkey Vultures, have, until recent years, on account of their bare wattled heads and similarity of habits, been associated in all schemes of classification with the Vultures of the Old World. Garrod, however, considered from certain anatomical points that the Sarcorhamphidæ had strong affinities with the Storks, and placed them between these birds and the Herons. Seebohm went further, and put the American Vultures between the Hornbills and the Steganopodes; but there is little doubt that the position accorded them by Huxley is the correct one, and that they must be regarded as an aberrant group of the Birds of Prey. In spite of their general resemblance to the true Vultures, they may be distinguished by the perforated nostrils and the structure of the skull, characters which separate them from all other forms of Accipitres.

We are indebted to Mr. W. P. Pycraft for the following diagnostic characters of the Sarcorhamphidæ:—"Skull holorhinal; nares pervious; palate indirectly desmognathous, the maxillo-palatines having the form of scroll-like plates, bridged by paired lateral outgrowths from the nasal septum; lachrymals fused with the frontals and without free posterior horizontal spurs; basipterygoid processes present; olfactory chambers of great size; anterior palatine vacuity very large."

The Condors (*Sarcorhamphus*) are strictly Andean and do not occur within our limits, but the King Vulture (*Gypagus*) and the Turkey Vultures (*Catharista* and *Cathartes*) are found in Central America, the latter genera extending into North America. *Pseudogryphus* has but one representative, the Californian Turkey Vulture (*P. californianus*), while *Cathartes* has one species at least peculiar to South America.

GYPAGUS.

Gypagus, Vieillot, Anal. p. 21 (1816).
Gyparchus, Gloger, Hand- u. Hilfsb. Nat. p. 235 (1842).
Cathartes, Sharpe, Cat. Birds Brit. Mus. i. p. 22 (1874, ex Illiger).

The well-known King Vulture is the only representative of the genus *Gypagus* and is distinguished from *Sarcorhamphus* by its small size and brighter plumage. The

outer and inner toes of the Condors are nearly equal in length, but in *Gypagus* the outer toe is longer than the inner one; the bill is very stout, and the cere is shorter than the upper mandible, the genus in this respect differing from the smaller and more slender-billed Turkey Vultures and resembling the Condors.

1. Gypagus papa.

The King of the Vultures, Edwards, Birds, i. p. 2, t. 2 [1].

Vultur papa, Linn. Syst. Nat. i. p. 122 [2].

Cathartes papa, Illig. Prodr. p. 230 [3]; Licht. Preis-Verz. Mex. Vög. p. 3 [4] (*cf.* Cab. J. f. Orn. 1863, p. 58 [5]); Sharpe, Cat. Birds Brit. Mus. i. p. 22 [6]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 43 [7]; Boucard, P. Z. S. 1878, p. 45 [8]; Sumichr. La Nat. v. p. 235 [9].

Gypagus papa, Vieill. N. Dict. d'Hist. Nat. xxxvi. p. 456 [10]; Salvin, Cat. Strickl. Coll. p. 509 [11]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 169 [12]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 522 [13]; Ridgw. Man. N. Amer. Birds, ed. 2, p. 219 [14]; Sharpe, Hand-l. Birds, i. p. 240 [15].

Sarcorhamphus papa, Scl. P. Z. S. 1857, p. 227 [16]; Lawr. Ann. Lyc. N. Y. viii. p. 2 [17]; Mem. Bost. Soc. N. H. ii. p. 303 [18].

Gyparchus papa, Moore, P. Z. S. 1859, p. 51 [19]; Scl. & Salv. Ibis, 1859, p. 214 [20]; 1860, p. 194 [21]; v. Frantz. J. f. Orn. 1869, p. 370 [22]; Nutting, Pr. U. S. Nat. Mus. v. p. 405 [23]; vi. p. 378 [24].

Supra lactescenti-albus, vix roseo indutus; cervice saturate schistacea, nucham versus nigricante; dorso postico mediano, uropygio, supracaudalibus et cauda nigris; tectricibus alarum minoribus et medianis lactescenti-albis, dorso concoloribus, tectricibus majoribus et remigibus nigris paullo viridi nitentibus, et extus anguste albido limbatis; corpore subtus toto et subalaribus lactescenti-albis; capite nuda carunculata et plaga præpectorali nuda rubris, plumis faciei et fascia transoccipitali nigris; iride alba. Long. tota circa 30·0, alæ 20·5, caudæ 8·7, culm. (cum cera) 2·35, tarsi 3·55. (Descr. maris adulti ex Volcan de Fuego, Guatemala. Mus. nostr.)

Juv. Omnino brunneus, alis caudaque nigricantioribus, pileo nudo fusco absque carunculis: rostro albicanti-corneo. (Descr. exempl. juv. ex Quonga, British Guiana. Mus. nostr.)

Av. hornot. Omnino nigricans, remigibus anguste albido limbatis; pectore et abdomine albis; subalaribus nigris, albo paullulum mixtis; axillaribus albis. (Descr. exempl. ex Chimalapa, Tehuantepec. Mus. nostr.)

Hab. Mexico (*Deppe* [4 5]), both coasts up to 3000–4000 feet (*Sumichrast* [9]), Acaponeta, Mazatlan (*Grayson* [18]), San Andres Tuxtla, Vera Cruz (*Boucard* [16]), Ticaro (*Ferrari-Perez* [12]), Orizaba, Rio Coatzacoalcos, Santa Efigenia, Cacoprieto, Tonalá (*Sumichrast* [9]), Chimalapa (*Richardson*); Guatemala (*Constancia* [11]), Tierra Caliente of both coasts [20], Coban, San Gerónimo, Escuintla, Masagua (*O. S. & F. D. G.* [21]), Vera Paz (*Leyland* [19]); Honduras, Omoa, San Pedro (*Leyland* [19]); Nicaragua, San Juan del Sur (*Nutting* [24]), Rio Escondido (*Richmond* [13]), San Juan del Norte (*v. Frantzius* [22]); Costa Rica, San Mateo (*Boucard* [8]), Pacaca (*v. Frantzius* [22]), La Palma (*Nutting* [23]), Miravalles (*Arcé*), Piriz, Pozo Azul (*Underwood*); Panama (*M'Leannan* [17]).—Tropical South America [15].

The King Vulture has not been recognized as a visitor to the Southern United States, but it is generally distributed throughout Mexico [7], according to Sumichrast.

In the north-western part of that country *G. papa* is rare, but Grayson records the capture of three specimens by a native in the mountains near Acaponeta, about eighty miles south-east of Mazatlan [18]. In Guatemala it frequents the coast-regions only, where the species may be observed either soaring high in the air and wheeling in circles during the heat of day or feeding on some putrid carcase, driving off any Black Vulture that ventures to approach. When thoroughly gorged, the bird repairs to a neighbouring tree to digest its meal. The Spanish term for this species, both in Guatemala and in Nicaragua, is "El Rey Zopilote," answering exactly to our "King of the Vultures" [20 23].

In Nicaragua Mr. Richmond [13] states that the species was frequently observed on the Rio Escondido. He remarks that, occasionally, several were seen in one day, but the birds habitually soar so high that they escape notice. One was secured on the Rio Frio, where it was attracted to the clearing by a large snake killed a few days previously. On approaching the tree where it was about to alight, several Black Vultures hastily fled. Mr. Nutting [23] says that in Costa Rica the species was somewhat rare near La Palma.

Mr. Champion informs us that he has seen examples of this species on the plain of David, in Chiriqui, feeding on a small Alligator, and driving off, as usual, the commoner Vultures till they themselves were satisfied.

CATHARISTA *.

Catharista, Vieillot, Anal. p. 21 (1816).
Catharistes, Sharpe, Cat. Birds Brit. Mus. i. p. 23 (1874).

The single species referred to this genus is distinguished from *Sarcorhamphus* and *Gypagus* by its smaller size and by the absence of coloured warts or caruncles upon the bare head. The bill is weak, and the cere is longer than the upper mandible. In these respects *Catharista* is closely allied to *Cathartes*, but in addition to the black colour of the naked head and neck, the wing is much less pointed, and the flight of the bird is different from that of the red-headed Turkey Vulture. The quills do not reach beyond the middle of the tail, which is square.

1. Catharista atrata.

Vultur atratus, Bartram, Trav. p. 289 (1791) [1].
Cathartes atratus, Scl. P. Z. S. 1857, p. 211 [2]; Moore, P. Z. S. 1859, p. 51 [3]; Scl. & Salv. Ibis, 1859, p. 213 [4]; Lawr. Ann. Lyc. N. Y. viii. p. 2 [5]; Mem. Bost. Soc. N. H. ii. p. 303 [6]; Dugès, La Nat. i. p. 138 [7]; Salv. Ibis, 1869, p. 319 [8].
Catharista atrata, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 44 [9]; Nutting, Pr. U. S. Nat. Mus. v.

* In Salvin's MSS. of the Sarcorhamphidæ he adopted the genus *Catharista* as distinct from *Cathartes,* and this arrangement has therefore been adhered to, though some prominent ornithologists do not accept this view.—Ed.

p. 405 [10]; vi. p. 378 [11]; Belding, Pr. U. S. Nat. Mus. vi. p. 344 [12]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 168 [13]; Herrera, La Nat. (2) i. pp. 175 [14], 319 [15]; Stone, Pr. Ac. Phil. 1890, p. 204 [16]; Bendire, Life Hist. N. Am. Birds, i. p. 165, t. 4. figs. 7, 10 [17]; Cherrie, Auk, 1892, p. 328 [18]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 522 [19]; Chapman, Bull. Amer. Mus. viii. p. 287 [20]; x. pp. 35 [21], 43 [22].

Catharistes atratus, Sharpe, Cat. Birds Brit. Mus. i. p. 24 [23]; Boucard, P. Z. S. 1878, p. 45 [24]; 1883, p. 457 [25]; Sumichr. La Nat. v. p. 235 [26].

Cathartes fœtens, Licht. Verz. Doubl. p. 63 [27]; v. Frantz. J. f. Orn. 1869, p. 370 [28].

Catharistes urubu, Sharpe, Hand-l. Birds, i. p. 240 [29].

Nigra; primariis longioribus extus basin versus grisescenti-brunneis, subtus quoque grisescentibus, prope rhachidem albam albicantibus: rostro fusco, apicem versus albicante; capite nudo et plaga præpectorali nuda fuscis. Long. tota circa 22·5, alæ 16·3, caudæ 6·85, culm. (cum cera) 2·4, tarsi 3·3. (Descr. exempl. ad. ex Coban, Guatemala. Mus. nostr.)

Juv. haud ab adultis distinguendus.

Hab. North America, Southern States to North Carolina and the Mississippi Valley, casually to Maine, New York, Ohio, Indiana, Illinois, Dakota, &c. [17].—Mexico, generally distributed (*Sumichrast* [9 26]), Guaymas (*Belding* [12]), Mazatlan (*Grayson* [6]), Presidio de Mazatlan (*Forrer*), Guanajuato (*Dugès* [7]), Valley of Mexico (*Herrera* [14 15]), Jalapa (*Ferrari-Perez* [13], *Chapman* [21]), Las Vigas [22], Chichén Itzá [20] (*Chapman*), Orizaba (*Botteri* [2]), Yucatan (*Gaumer* [24]), Tekanto (*Stone & Baker* [16]); Guatemala, generally distributed [4], San Gerónimo [4], Coban, Dueñas, &c. (*O. S. & F. D. G.*); Honduras, Omoa (*Leyland* [3]); Nicaragua, Rio Escondido (*Richmond* [19]), San Juan del Sur (*Nutting* [11]); Costa Rica, generally distributed (*v. Frantzius* [28], *Carmiol* [8], *Boucard* [24]), San José (*Cherrie* [18]), La Palma (*Nutting* [10]); Panama (*M'Leannan* [5]).—South America generally, except the extreme south and the higher Andes [23].

The range of the Black Turkey Vulture in the United States is more restricted than that of *Cathartes aura*, and the species is not so plentiful in the interior as on the sea-coast. Like the common Turkey Vulture, *C. atrata* is a migrant, and is found only in certain parts of the Southern States during the winter. Mr. Ridgway believes it to be absent from California, but throughout Mexico, Central and South America, excepting in the extreme south of that continent and the higher Andes, it is universally distributed and breeds abundantly.

With the exception perhaps of *Quiscalus macrurus*, this is the most familiar bird in Guatemala, every town and village, up to an elevation of about 6000 feet, having its "Zopilotes" performing the useful task of scavengers. Mr. Champion informs us that in the State of Panama they are known by the name of "Gallote." At night these birds are said to retire to the forest, and in the early morning to troop back to their posts in the streets and lanes and to the tops of the houses and churches, patiently waiting for any chance carrion.

They usually breed in the woods in well-concealed spots, making little or no nest,

but in Antigua, Guatemala, they are said to use the ruins of old churches for that purpose.

The flight and nesting-habits of this species differ considerably from those of *Cathartes aura*. The eggs are two, rarely three, in number, and rather larger and more sparingly marked than those of the latter species; the ground-colour is a pale grey-green.

CATHARTES.

Cathartes, Illiger, Prodr. p. 236 (1811).
Rhinogryphus, Ridgway, Hist. N. Amer. Birds, iii. p. 337 (1874).
Œnops, Sharpe, Cat. Birds Brit. Mus. i. p. 25 (1874)

As we have pointed out above, the genus *Cathartes* is very similar to *Catharista* in appearance and structure, but differs in its longer and more pointed wings, which reach to the end of the tail, the latter being rounded. The primaries are longer and extend beyond the secondaries further than in *Catharista*. Mr. Ridgway (Man. N. Am. Birds, 2nd ed. p. 219) also calls attention to the shape of the nostrils in the two genera, these in *Cathartes* being "small and narrow, occupying only the posterior half of the nasal fossæ, with the anterior end pointed."

Two species are recognized, and the range of the genus extends over the greater part of North and South America.

1. Cathartes aura.

The Turkey Buzzard, Catesb. Nat. Hist. Carol. i. p. 6, t. 6 [1].
Vultur aura, Linn. Syst. Nat. i. p. 122 [2].
Cathartes aura, Ill. Prodr. p. 236 [3]; Licht. Preis-Verz. Mex. Vög. p. 3 [4] (*cf.* J. f. Orn. 1863, p. 58 [5]); Scl. P. Z. S. 1857, p. 211 [6]; Moore, P. Z. S. 1859, p. 51 [7]; Scl. & Salv. Ibis, 1859, p. 213 [8]; Lawr. Ann. Lyc. N. Y. viii. p. 2 [9]; Mem. Bost. Soc. N. H. ii. p. 303 [10]; Dugès, La Nat. i. p. 138 [11]; v. Frantz. J. f. Orn. 1869, p. 370 [12]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 267 [13]; Nutting, Pr. U. S. Nat. Mus. v. p. 405 [14]; vi. p. 377 [15]; Belding, Pr. U. S. Nat. Mus. vi. p. 344 [16]; Herrera, La Nat. (2) i. pp. 174 [17], 319 [18]; Salv. Ibis, 1889, p. 375 [19]; 1890, p. 89 [20]; Stone, Pr. Ac. Phil. 1890, pp. 204 [21], 214 [22]; Bendire, Life Hist. N. Am. Birds, i. p. 161, t. 4. figs. 1, 3 [23]; Cherrie, Auk, 1892, p. 328 [24]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 522 [25]; Allen, Bull. Am. Mus. N. H. v. p. 34 [26]; Chapman, Bull. Amer. Mus. N. H. viii. p. 287 [27]; x. pp. 35 [28], 43 [29]; Nelson, N. Amer. Faun. no. 14, p. 37 [30].
Œnops aura, Sharpe, Cat. Birds Brit. Mus. i. p. 25 [31]; Boucard, P. Z. S. 1878, p. 45 [32]; Sumichrast, La Nat. v. p. 235 [33].
Rhynogryphus aura, Lawr. Bull. U. S. Nat. Mus. no. 4. p. 44 [34]; Salvad. Boll. Mus. Torino, xiv. no. 339, p. 10 [35].

Niger, chalybeo vel purpureo nitens; alis brunnescentioribus, remigibus purpureo vel chalybeo-viridi lavatis, his infra griseis, rhachidibus albis vel pallide brunneis; capite nudo, coccineo: rostro albo; iride griseo-brunnea. Long. tota circa 24·0, alæ 18·8, caudæ 10·0, culm. (cum cera) 2·0, tarsi 2·3. (Descr. exempl. ad. ex Cozumel I., Yucatan. Mus. nostr.)

Juv. similis adultis, sed rostro nigricante ; pilei colore livido fusco (*teste* Ridgway, Man. N. Amer. Birds, 2nd ed. p. 221).

Hab. North America, more or less regularly to Southern New England, New York, Saskatchewan, and British Columbia.—Mexico, generally distributed (*Sumichrast*[34], *Deppe*[4 5]), Guaymas (*Belding*[16]), Fronteras in Sonora (*Robinette*[26]), Mazatlan (*Grayson*[10]), Tres Marias Is. (*Grayson*[10 13], *Nelson*[30]), Guanajuato, Guadalajara (*Dugès*[11]), Colima (*Xantus*[10]), Valley of Mexico (*Herrera*[17 18]), Jalapa[28], Las Vigas[29], Chichén Itzá[27] (*Chapman*), State of Vera Cruz from the sea-level to a height of 14,000 feet, Volcan de Orizaba[6], Popocatepetl, &c. (*Sumichrast*[33]), Ixtaccihuatl, San Andres Chalchicomula, Toluca (*Baker*[22]), Rio Rancho Nuevo (*Ferrari-Perez*), Tekanto, Tunkas, Ticul, and Uxmal in N. Yucatan (*Stone & Baker*[21]), Cozumel I.[19 20], Bonacca I.[19] (*Gaumer*); Guatemala, generally distributed from the sea-level to a height of 13,000 feet, Volcan de Fuego, Dueñas, Coban, &c. (*O. S. & F. D. G.*[8]); Honduras, Omoa (*Leyland*[7]), Ruatan I. (*Gaumer*[19]); Nicaragua, San Juan del Sur (*Nutting*[15]), Rio Escondido (*Richmond*[25]); Costa Rica, generally distributed (*v. Frantzius*[12], *Underwood*), San José (*Boucard*[32], *Cherrie*[24]), La Palma (*Nutting*[14]); Panama (*M'Leannan*[9]), Punta de Sabana (*Festa*[25]).—South America generally.

The Red-headed Turkey Vulture is common throughout the Southern United States, becoming rarer as it advances northwards, according to Bendire[23], who says that it is "resident to the east of the Rocky Mountains from about lat. 39° southward, while on the Pacific coast it winters as far north as lat. 46° near the mouth of the Columbia River."

Widely distributed in Mexico and Central America, *C. aura* frequents the open country rather than the towns, and occurs from the sea-level to an elevation of 14,000 feet in the higher mountains. It does not appear to be so plentiful in Central America as *Catharista atrata*, and we found this to be the case in Guatemala, where the bird was observed in less cultivated or forest districts.

Dr. Ralph writes, in Bendire's 'Life Histories of North American Birds'[23], that he had often seen *C. aura* in company with Black-headed Vultures floating down a river on a dead alligator, cow, or other large animal, so closely packed that they could hardly keep their balance, with others following on the wing.

This Vulture makes little or no attempt at a nest. The eggs are laid in cavities or holes in rocks or trees, often on the bare ground, and under bushes; sometimes in an old Hawk's nest at a considerable height from the ground. They are two, rarely three, in number, of a creamy-white colour, with blotches or spots of red, chocolate-brown, or lavender, these markings varying in intensity, even in the same clutch, to almost spotless white[23].

Cathartes burrovianus of Cassin (Pr. Acad. Philad. ii. p. 212) has been considered by most writers to be a small example of the common Turkey Vulture of North America; but Mr. Ridgway has recently examined the type-specimen, and states that it is identical with *C. urubitinga* of Pelzeln, the very distinct and well-known Orange-headed Turkey Vulture of South America.

This species was described by Cassin in 1845 from a single specimen presented by Dr. Burrough to the Academy of Natural Sciences of Philadelphia, and was said to have been obtained in Vera Cruz, Mexico. Considering the number of naturalists who have collected in all parts of Central America during the last fifty years, it is not a little surprising that no one has ever noticed so conspicuous a bird as an Orange-headed Turkey Vulture.

In addition to the head being differently coloured from that of *C. aura*, the species is distinguished by the feathering on the hind-neck, which is continued to the nape.

In a letter to Mr. Ridgway Prof. A. Dugès describes a downy young bird from Guanajuato, which the latter thinks may be the young of *C. burrovianus*. At present we cannot believe that the Orange-headed Vulture is an inhabitant of any portion of Central America.

In Amazonia, especially near Pará, *C. urubitinga* is said by Dr. Goeldi to be not uncommon, being usually found in the vicinity of water. The food consists chiefly of dead fish, but living ones are occasionally captured.

The Californian Vulture (*Pseudogryphus californicus*) was supposed by Don Alfonso Herrera to be found in the Valley of Mexico [La Nat. (2) i. pp. 175, 319], but, from a MS. note which he has kindly sent us, it appears that there are no trustworthy data of the occurrence of this species in Mexico.

Order STEGANOPODES.

The chief feature distinguishing this Order is the interdigital web, which unites even the hallux or hind toe to the others, hence the name of "Totipalmati" given to it by old writers. Other notable characters are the desmognathous palate, the absence of basipterygoid processes, and the marked features of the pterylography, &c.

Mr. Pycraft has recently written an important paper on the osteology of the Steganopodes (P. Z. S. 1898, p. 82), and we have here adopted his conclusions, with only a slight deviation from the arrangement of the various groups.

In the Steganopodes the following Families occur, all of which have representatives in the Central-American Avifauna:—1. Phaethontidæ, 2. Fregatidæ, 3. Pelecanidæ, 4. Sulidæ, 5. Phalacrocoracidæ, 6. Plotidæ.

Fam. PHAETHONTIDÆ.

The Tropic-birds are distinguished from the rest of the Steganopodes by the form of the tail and bill. The central feathers of the former are produced considerably beyond the others, and the nostrils are distinct and linear in shape. Mr. Pycraft gives the following definition of the Family [*cf.* Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 450]:—"Nostrils pervious; palatines completely separate one from the other; vomer present; a deep nasal hinge; carina extending nearly the whole length of the corpus sterni; free end of clavicle not provided with a facet for articulation with the acrocoracoid."

PHAETHON.

Phaëton, Linn. Syst. Nat. i. p. 219 (1766).

Phaëthon, Illiger, Prodr. p. 280 (1811); Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 450 (1898).

The characters of the genus *Phaethon* are the same as those of the family Phaethontidæ, of which it is the sole representative. Mr. Ogilvie Grant characterizes the genus as follows:—"Bill compressed, pointed, and slightly curved throughout, the cutting-edges of the mandibles serrated; nostrils distinct, linear; wings long, the first primary rather longer than the second; tail composed of from 12 to 16 feathers, the middle pair being greatly elongated and attenuated; tarsus very short."

Six species of Tropic-birds are known, all of them inhabitants of the tropical seas. Two occur off the coasts and islands of Central America, viz. *P. americanus* and *P. æthereus.*

1. Phaethon americanus.

Tropick-Bird, Catesby, N. H. Carolina, ii. App. t. 14 [1].

Phaeton æthereus, Audub. Birds Amer. vii. p. 64, t. 427 (nec Linn.) [2].

Phaeton flavirostris (nec Brandt), Bryant, Pr. Bost. Soc. N. H. vii. p. 128 [3]; Gundl. Orn. Cuban. p. 314 [4]; Scott, Auk, viii. pp. 253–256 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 39 [6].

Phaëthon americanus, Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 456 [7].

Pure albus, macula anteorbitali nigra, supra regionem paroticam producta; tectricibus alarum medianis nigris, et scapularibus ad apicem nigris, vel nigris albo limbatis; primariis externis nigris, intus albis et albo apicatis; secundariis intimis nigris, intus albis et albo late terminatis: subtus pure albus, hypochondriis imis medialiter late griseo-nigro striatis; rectricibus 12, albis, roseo tinctis, rhachidibus nigris: rostro flavo. Long. tota circa 29·0, alæ 10·5, caudæ 4·6, rectr. med. 18·0, culm. 2·0, tarsi 0·9. (Descr. maris adulti ex Bermuda. Mus. nostr.)

♀ mari similis. Alæ 11·0.

Hab. West Indies and Atlantic Coast of Central America north to Florida and Bermuda, accidental in Western New York [6]; Bahamas [3], Jamaica [5], Cuba [4], &c.

The Central-American representative of the yellow-billed Tropic-bird of the Old

World undoubtedly occurs on the Atlantic coast, though its capture has not been recorded within our limits. The specimen from the Gulf of Nicoya procured by Salvin in 1870, and referred to this species, is considered by Mr. Ogilvie Grant to be an immature *P. æthereus*.

2. Phaethon æthereus.

Phaeton æthereus, Linn. Syst. Nat. i. p. 219 [1]; Finsch, Abh. nat. Ver. Bremen, 1870, p. 362 [2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [3]; Goss, Auk, v. p. 244 [4].

Phaethon æthereus, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 39 [5]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 457 [6]; Anthony, Auk, xv. pp. 314 [7], 316 [8], 317 [9]; Nelson, N. Amer. Faun. no. 14, p. 28 [10].

Phaeton flavirostris, Salv. Ibis, 1870, p. 116 (nec Brandt) [11].

Albus, notæo crebre nigro fasciolato; supracaudalibus haud externe fasciatis; rectricibus 14, pure albis, rhachidibus basin versus nigris; tectricibus alarum albis, minimis et medianis plus minusve celatim nigro sagittatis; secundariis intimis nigris, albo utrinque marginatis; tectricibus primariorum et primariis nigris, intus et ad apicem albis, remigibus reliquis albis, rhachidibus basin versus nigris; pileo albo, macula anteorbitali et fascia lata supra regionem paroticam nigris; facie laterali et corpore subtus toto pure albis, hypochondriis fasciis latis nigris ornatis et interdum marmoratis; subalaribus et axillaribus albis: rostro læte corallino; pedibus et digitorum basi flavis, digitis aliter et unguibus nigris; iride nigra. Long. tota circa 41·0, alæ 11·8, caudæ 4·55, rectr. med. 27·0, culm. 2·5, tarsi 1·2. (Descr. maris adulti ex Ins. Anguilla. Mus. Brit.)

Juv. adultis similis, sed fasciis transversalibus nigris latioribus et cauda abbreviata distinguendus. (Descr. exempl. ex Nicoya. Mus. nostr.)

Hab. Coasts of Tropical America to as far north as Cape Colnett, Lower California, on the Pacific side, occasionally on the Newfoundland Banks [5].—Revillagigedo Is., San Benedicte I. [7], Socorro I. [8], and Clarion I. [9] (*Anthony*); Mexico, 130 miles off the west coast (*Finsch* [2]), Tres Marias Is., Isabel I., and rocky islets near San Blas (*Nelson* [10]), coast of Michoacan (*Xantus* [3]); Salvador, Acajutla (*Capt. Dow* [6]); Costa Rica, Gulf of Nicoya (*E. Arcé* [11]).—West Indies, Anguilla I.

This species is an inhabitant of the tropical portions of the Atlantic and Pacific Oceans. It has been met with on some of the West-Indian Islands, and doubtless visits the Atlantic coasts of Central America, though at present we have no actual record of its occurrence there. On the Pacific side this Tropic-bird is known to breed on San Pedro Martir and other islands in the Gulf of California [4 5], and Mr. Anthony found it common on the Revillagigedo Islands [7 8 9]. Mr. Nelson says that it breeds on Isabel Island, and in suitable places on rocky islets near San Blas and about the Tres Marias [10]. Dr. Otto Finsch records a specimen as having been obtained at sea 130 miles from the west coast of Mexico [2]. Arcé sent us a young bird with yellowish bill from the Gulf of Nicoya, which we at that time determined as *P. flavirostris* [11].

The sitting-birds never attempt to fly away, but defend their eggs with great vigour and loud cries, which Mr. Nelson describes as consisting of "a series of short, harsh,

clicking or rattling sounds, something like the noise of an old-fashioned watchman's rattle."

The single egg is deposited on a bare rock in the cavity of a cliff; it is oval, the ground-colour creamy-white or pink, covered with small dots of reddish-brown and larger blotches or spots of purple or purplish-red.

Fam. FREGATIDÆ.

The Frigate-birds, according to Mr. Ogilvie Grant (Cat. Birds Brit. Mus. xxvi. p. 329), are to be distinguished from the rest of the Steganopodes by the strongly forked tail, and by the deep emargination of the webs between the toes. Mr. Pycraft adds the following osteological characters:—"Palatines fused at the posterior end only; a large vomer; no nasal hinge; sternum broader than long; carina extending the whole length of the *corpus sterni*; furcula fused dorsally with the head of the coracoid, and ventrally with the *carina sterni*."

FREGATA.

Fregata, Briss. Orn. vi. p. 506 (1760); Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 442 (1898).
Tachypetes, Vieill. Anal. pp. 63, 70 (1816).

There is but one genus of Frigate-birds, and therefore the family-characters are the same as those of the genus *Fregata*. The bill is somewhat Accipitrine, and is very strongly hooked, with a deep lateral groove, near the base of which the linear nostrils are situated. Another remarkable feature is the large bare gular pouch, which is capable of considerable dilation. The tail consists of twelve feathers only, whereas in other families of the Steganopodes the number varies considerably, and in the Pelecanidæ reaches to twenty-four. The tarsus in *Fregata* is very short and is clothed with feathers; and the margin of the claw of the middle toe is pectinated.

Only two species of *Fregata*, a large one (*F. aquila*) and a small one (*F. ariel*), are known. In many parts of the Indian and Pacific Oceans they occur in the same area, but the former alone is found off the American coasts.

1. Fregata aquila.

Man of War Bird, Edwards, Gleanings Nat. Hist. ii. p. 209, t. 309 [1].
Pelecanus aquilus, Linn. Syst. Nat. i. p. 216 [2].
Tachypetes aquilus, Lawr. Mem. Bost. Soc. N. H. ii. p. 316 [3]; Bull. U. S. Nat. Mus. no. 4, p. 51 [4]; Sumichr. La Nat. v. p. 235 [5].
Tachypetes aquila, Scl. & Salv. Ibis, 1859, p. 233 [6]; Frantz. J. f. Orn. 1869, p. 379 [7]; Nutting, Pr. U. S. Nat. Mus. v. p 405 [8]; vi. p. 378 [9].
Fregata aquila, Taylor, Ibis, 1859, p. 150 [10]; 1860, p. 316 [11]; Salv. Ibis, 1864, p. 374 [12]; 1889, p. 376 [13]; Boucard, P. Z. S. 1883, p. 458 [14]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 169 [15];

Ridgw. Pr. U. S. Nat. Mus. x. p. 578 [16]; Stone, Pr. Acad. Philad. 1890, p. 203 [17]; Richm. Pr. U. S. Nat. Mus. xvi. p. 532 [18]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 46 [19]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 443 [20]; Anthony, Auk, xv. pp. 314 [21], 316 [22], 317 [23]; Nelson, N. Amer. Fauna, no. 14, p. 33 [24].

Omnino niger, pilei cristati et notæi plumis lanceolatis, chalybeo-viridi vel purpurascenti-violaceo iridescentibus; alis caudaque nigerrimis, vix chalybeo nitentibus, rectricum rachidibus subtus albis: subtus omnino niger, vix chalybeo adumbratus: rostro fusco; gula nuda scarlatina; pedibus nigris; iride brunnea. Long. tota circa 48·0, alæ 24·3, caudæ 17·6, culm. 4·4, tarsi 0·8. (Descr. maris adulti ex Belize. Mus. nostr.)

♀ *ad.* Supra mari similis, nigra chalybeo vel purpureo nitens, tectricibus alarum brunnescentioribus; mento nudo, gutture reliquo nigro; præpectore tamen et pectore albis; abdomine, subcaudalibus subalaribusque nigris: rostro albicante; pedibus coccineis. Long. tota circa 36·0, alæ 24·2. (Descr. feminæ adultæ ex Man-o'-War Cay. Mus. nostr.)

Juv. feminæ adultæ similis, sed pileo undique aut ferrugineo aut albo: subtus albus, pectoris lateribus, hypochondriis et subcaudalibus nigricantibus. (Descr. exempl. ex Belize. Mus. nostr.)

Hab. Tropical and Subtropical Coasts generally, in America as far north as Florida and Texas, and casually to Nova Scotia, Ohio, Wisconsin, Kansas, and Humboldt Bay, California [19].—Revillagigedo Is., San Benedicte I. [21], Socorro I. [22], Clarion I. [23] (*Anthony*); Mexico, abundant on both coasts, Ventosa Bay in Tehuantepec [4], Santecomapan and Santa Maria del Mar, Tehuantepec, Tonala, Chiapas (*Sumichrast* [5]), Isabella I., off Mazatlan (*Bischoff*, *Grayson* [3]), Tres Marias Is. (*Nelson* [24]), San Juanito, Tamaulipas (*Richardson* [20]), La Mancha, Vera Cruz (*Ferrari-Perez* [15]), Yucatan (*Cabot* [14], *Stone & Baker* [17]), Cozumel I. (*Gaumer* [13]); British Honduras, Belize Coast, Man-o'-War Cay (*O. S.* [12]); Guatemala, both coasts (*O. S.* [6]), Champerico (*mus. nostr.* [22]); Honduras, Bay of Fonseca (*Taylor* [6 11]), Swan I. (*Townsend* [16]); Nicaragua, Coast and Lake of Nicaragua, R. Escondido (*Richmond* [18]), San Juan del Sur, Pacific Coast (*Nutting* [9]); Costa Rica, Gulf of Nicoya (*Nutting* [8]); Panama (*Kellett & Wood*, *Mus. Brit.* [20]).—Coasts of Venezuela, Brazil, and Peru [20].

This species is common on both shores of Central America. Mr. Witmer Stone saw a flock of a hundred off the coast of Yucatan, and Salvin noticed a number of these birds about the Cays of British Honduras. In Nicaragua, Mr. Richmond found *F. aquila* plentiful on the coast, and not uncommon about the Lake of Nicaragua; he also observed others fifty miles up the Escondido River. On Isabella and the Revillagigedo Islands they breed abundantly.

The Frigate- or Man-of-War Bird is remarkable for its powerful flight, frequently ascending to such heights as to be almost invisible. When flying, it opens and shuts its forked tail in exactly the same way as the little Scissor-tailed Tyrant-birds (*Milvulus*). It does not dive after its food like the Gannet, but seizes on and devours any fish on the surface of the water or those left stranded by the receding tide. Mr. Nutting mentions that one of those he shot disgorged no less than twenty-three small fishes from its pouch. On Socorro Island, Mr. Anthony states that the Frigate-birds live chiefly by robbing the Gannets, and forcing them to disgorge their prey.

A breeding-place which Salvin [12] visited in April, 1862, was situated on Man-o'-War Cay off the coast of British Honduras. As he approached, the birds flew off in a large flock and hovered above him after the manner of Rooks when their homes are disturbed. The nests were placed on the tallest mangroves, so that he had to climb for the few rotten eggs which he managed to secure. On ascending a tree he was able to view the whole colony of nests containing young birds in every stage of growth. Where there were unhatched eggs he had the greatest difficulty in getting the old bird to move, from which he inferred that they did not like to expose them in their open nests to the heat of the tropical sun. A very interesting account of the nesting of the Frigate-bird on Bird Island in Fonseca Bay on the Pacific coast of Honduras is given by Mr. George Cavendish Taylor [10]; he describes the nest as consisting of a frail platform of crossed sticks, hardly so large as that of our English Wood-Pigeon, on which only one chalky-white egg is laid.

Fam. PELECANIDÆ.

The Pelicans are a very distinct family of birds, distributed throughout the temperate and tropical regions of both Hemispheres. Mr. Pycraft's osteological characters for the separation of the Pelecanidæ from the rest of the Steganopodes are few in number, as the external form is so peculiar that but little description is necessary. The palatines are fused in the middle line and are provided with a deep median keel; furcula fused with the carina sterni, which is about three-quarters of the length of the corpus sterni. Among the external characters which distinguish this family from all others may be mentioned the long flat bill with its hooked nail at the end, and the large pouch or bag suspended between the rami of the lower jaw and capable of very considerable dilation. The wings are of great size and strength, and, according to Mr. Ogilvie Grant (Cat. Birds Brit. Mus. xxvi. p. 460), the tail-feathers vary from twenty-two to twenty-four in number. The tarsi are bare, very much compressed and reticulated. Eleven species of Pelicans have been described, of which two at least may be accounted inhabitants of Central America.

PELECANUS.

Pelecanus, Linn. Syst. Nat. i. p. 215 (1766); Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 460 (1898).

The characters specified above as those of the family apply equally to the single genus *Pelecanus*, and need not be further discussed.

Of the two Central-American species, *P. erythrorhynchus*, with its curious knob on the bill in the breeding-season, is quite distinct; but of *P. fuscus*, two races—an eastern and a western—are now recognized by American naturalists. In our opinion, however, the evidence on this point seems to be by no means conclusive, and we have deemed it better to unite them.

1. Pelecanus fuscus.

The Pelican of America, Edwards, Nat. Hist. Birds, ii. p. 93, t. 93 [1].

Pelecanus fuscus, Gmel. Syst. Nat. i. p. 570 [2]; Scl. & Salv. Ibis, 1859, p. 233 [3]; Taylor, Ibis, 1860, p. 316 [4]; Lawr. Ann. Lyc. N. Y. viii. p. 13 [5]; Mem. Bost. Soc. N. H. ii. p. 316 [6]; Bull. U. S. Nat. Mus. no. 4, p. 50 [7]; Scl. & Salv. P. Z. S. 1864, p. 373 [8]; Salv. Ibis, 1864, pp. 374 [9], 377 [10]; 1865, p. 198 [11]; 1889, p. 376 [12]; v. Frantz. J. f. Orn. 1869, p. 379 [13]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 302 [14]; Sumichr. La Nat. v. p. 235 [15]; Nutting, Pr. U. S. Nat. Mus. v. p. 405 [16], vi. p. 378 [17]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 169 [18]; Stone, Pr. Philad. Acad. 1890, p. 203 [19]; Richm. Pr. U. S. Nat. Mus. xvi. p. 531 [20]; A. O. U. Check-l. N. Amer. Birds, p. 46 [21]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 475 [22].

Pelecanus thagus, Licht. Preis-Verz. Mex. Vög. p. 3 (nec Molina) [23]; Cab. J. f. Orn. 1863, p. 59 [24].

Pelecanus californicus, Ridgw. Water-Birds N. Amer. ii. p. 143 [25]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 788 [26]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 46 [27]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 478 [28]; Nelson, N. Amer. Fauna, no. 14, p. 32 [29].

Ptil. hiem. Pallide canescens, plumis anguste nigro limbatis, scapularibus et tectricibus minimis latius marginatis; dorsi plumis medialiter argentescenti-albis, late nigro lanceolatim marginatis; remigibus nigris, secundariis extus canescentibus; rectricibus canis, intus fuscioribus; pileo, regione parotica et nucha cristata pallide stramineis, collo reliquo plumato albo, plumis rigidis marginem imam versus stramineo tinctis; præpectore et corpore reliquo subtus fumoso-brunneis, lateribus albo lineatim striatis; subalaribus et axillaribus medialiter albis, late schistaceo-brunneo marginatis: rostro griseo vel brunnescente, coccineo irregulariter notato, apicem versus nigro; regione nuda orbitali cærulea; gutture nudo sordide virescenti-brunneo, olivascenti-brunneo, vel etiam purpurascente; pedibus nigris; iride flavescente. Long. tota circa 41·0, alæ 19·5, caudæ 4·7, culm. 12·0, tarsi 2·9. (Descr. exempl. adult. ex Ins. Cozumel. Mus. nostr.)

♀ mari adulto similis, sed paullo minor.

♂ *ptil. nupt.* collo postico usque ad nucham velutino castaneo-brunneo, utrinque albo vel pallide stramineo marginato.

♀ *juv.* Magis brunnescens, plumis conspicue brunneo marginatis; pilei et colli plumis brunneis; præpectore et corpore reliquo subtus albis, lateribus schistaceo-brunneis, plumis albo medialiter lineatis.

Hab. Coasts of Tropical and Subtropical America, on the Atlantic side as far north as N. Carolina, accidental in Illinois (*P. fuscus*) [21], and on the Pacific side from Burrard Inlet, British Columbia, to the Galapagos Is. (*P. californicus*) [27].—Revillagigedo Is., Socorro I. (*Grayson* [14]); Mexico (*Deppe & Schiede* [23 24]), Guaymas (*Jouy* [26]), Mazatlan (*Bischoff* [6], *Grayson* [6]), Ventosa Bay, Tehuantepec (*Sumichrast* [7]), Santa Ana, Vera Cruz (*Ferrari-Perez* [18]), Yucatan, Progreso (*Stone & Baker* [19]), Cozumel I. (*Gaumer* [12]); British Honduras, Turneff Lagoon, Saddle Cay (*O. S.* [9 10]); Guatemala, Chiapam (*O. S.* [11]); Honduras, Fonseca Bay (*Taylor* [3 4]); Nicaragua, Greytown, Blewfields (*Richmond* [20]), San Juan del Sur (*Nutting* [17]); Costa Rica, Gulf of Nicoya (*Nutting* [16]); Panama (*M'Leannan* [5 8], *Kellett & Wood* [28]).—Coast of Guiana; West India Is. [22 28].

The western form of the Brown Pelican (*P. californicus*) has been separated by

Mr. Ridgway and other American ornithologists, as it is said to differ from the true *P. fuscus* in having the gular pouch red near the base during the breeding-season, which is corroborated by Mr. Anthony. The eastern *P. fuscus* is stated to have a dark pouch, variously described as dull green, olive-brown, or even purple. Mr. Alvin Seale, a well-known Californian collector, writing to Mr. Ogilvie Grant, is inclined to doubt the distinctness of *P. californicus*, as, according to his experience, the colour of the pouch varies from yellowish to dusky; hence, there being a diversity of opinion on the subject, we have united the two supposed races under the heading of *P. fuscus*.

P. fuscus is often found in considerable numbers along the Atlantic coast of Central America. It breeds on the islands, and Salvin visited a settlement of these birds on Saddle Cay, off the coast of British Honduras, on May 9th, 1862, but, though they were there in plenty, he could find no trace of nests in the trees in which they are said to build. The master of his schooner declared that the Pelicans built there in the months of November and December, and that as soon as the young could fly the old birds pulled the nests down. They sat on mangrove boughs for hours preening their feathers with their long hooked bills, all the time keeping their balance with ease, even when a strong wind tried the security of their footing. There are few sea-birds more interesting to observe than Pelicans fishing. Four or five usually rise in company and flying round to get the requisite impetus and height, with neck drawn in and beak slightly depressed, they suddenly, as it were, stop short in the air, and dash with outstretched neck into the water upon the shoal of fish; on coming to the surface they rest there but a moment to bolt the prey, which is done by throwing the bill upwards, thus distending the pouch [10].

The nests are large platforms of sticks, lined with fine roots and withered plants, forming a shallow basin; they are built on the mangroves, often side by side, covering the summit of the trees. The eggs are chalky-white, with a rosy tint when fresh, and measure—axis 2·85–2·95, diam. 1·9–2·0 inches.

2. **Pelecanus erythrorhynchus.**

Pelecanus erythrorhynchus, Gm. Syst. Nat. i. p. 571 (1788)[1]; Scl. & Salv. Ibis, 1859, p. 233[2]; Salv. Ibis, 1865, p. 197[3]; Dugès, La Nat. i. p. 142[4]; Lawr. Mem. Bost. Soc. N. H. ii. p. 316[5]; Bull. U. S. Nat. Mus. no. 4, p. 50[6]; Herrera, La Nat. (2) i. pp. 188[7], 330[8]; A. O. U. Check-l. N. Amer. Birds, p. 45[9]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 481[10].

Pelecanus trachyrhynchus, Frantz. J. f. Orn. 1869, p. 379[11]; Sumichr. La Nat. v. p. 235[12].

Pure albus, minime cristatus; tectricibus primariorum remigibusque nigris, secundariis extus cano lavatis, intimis albis dorso concoloribus; mandibulæ lateribus dense albo plumatis: rostro aurantiaco, culmine pallidiore, ungue terminali tomiisque rubescentibus, mandibula basin versus rubescentiore; gula nuda pallide flava, basin versus aurantiaca; pedibus aurantiaco-rubris; iride margaritacea; regione nuda oculari aurantiaca. Long. tota circa 66·0, alæ 23·0, caudæ 5·5, culm. 14·5, tarsi 4·85. (Descr. maris adulti ex Huamachal. Mus. nostr.)

Ptil. nupt. crista occipitali et nuchali; area præpectorali pallide flava; tectricibus minime flavo lavatis; culmine cornu osseo ornato.

Juv. adultis similis, sed tectricibus minoribus brunneis, albido marginatis.

Hab. North America, north in the interior to about lat. 61°, along the Gulf coast and on the coast of California [9].—Mexico, Rio Mazatlan (*Grayson* [5]), Guanajuato, Guadalajara (*Dugès* [4]), Valley of Mexico (*Herrera* [8], *Sumichrast* [12]), San Mateo [6], Orizaba [12] (*Sumichrast*); Guatemala (*Skinner* [2]), Mazatenango (*Bernoulli* [11]), Huamachal (*O. S.* [3 10]).

This species appears to be only a winter visitor to Central America, chiefly along the Pacific coast. Grayson says that it is occasionally seen in large numbers on the Rio Mazatlan, where it does not long remain, and Salvin met with a huge flock of at least a thousand in Guatemala, on the lagoons of Huamachal.

The American White Pelican soars like a Vulture, while the common *P. fuscus* does not, to our knowledge, do more than skim the surface of the waves. When in pursuit of prey, we observed that they never flew more than twenty or thirty yards from where they rose, while the noise they made when dashing into the water could be heard at a great distance, and the surface would be lashed into foam where many plunged in together.

The nest is described by Mr. Ridgway as merely a heap of earth and gravel raked into a pile and slightly hollowed, about six or eight inches high and twenty broad. The eggs are two, rarely three, in number, of a dull chalky-white colour.

Fam. SULIDÆ.

The Gannets are birds of extensive distribution, being found in nearly every temperate and tropical ocean.

The osteological features of the family are given by Mr. Pycraft in his diagnosis contributed to volume xxvi. of the 'Catalogue of Birds in the British Museum':—"Palatines fused in the middle line, with a slight median keel; a well-marked nasal hinge; postorbital process emarginate. Greater part of the carina sterni and the region of the sternum bearing the coracoid grooves produced far forward beyond the anterior lateral process of the sternum."

Mr. Ogilvie Grant, in the same volume, gives the external characters, which we have reproduced below under the heading of the genus *Sula*.

SULA.

Sula, Brisson, Orn. vi. p. 494 (1760); Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 423 (1898).

One genus only of this family is acknowledged by Mr. Ogilvie Grant, from whose work we adopt the characters here given:—"Bill stout, subcylindrical, and pointed, tapering gradually towards the extremity, which is very slightly curved, but never hooked; a linear groove on each side of the culmen; nostrils completely fused in adults; cutting-

edges of mandibles serrated, that of the upper mandible deeply cleft at the junction of the maxilla with the quadrato-jugal bar; chin and upper part of throat more or less naked. Wings very long and pointed, the first primary longest. Tail long and wedge-shaped, composed of from twelve to eighteen feathers. Tarsus short; outer and middle toes subequal; claws curved, that of middle toe broad and pectinate."

Ten species of Gannets are known, and in every case considerable time elapses before the full plumage is attained: the European *S. bassana* is said to require six years. This observation was, however, taken from birds in confinement, and it is more probable that the white plumage is fully assumed by the end of the third year.

1. Sula bassana.

Pelecanus bassanus, Linn. Syst. Nat. i. p. 217 [1].

Sula bassana, A. O. U. Check-l. N. Amer. Birds, p. 41 [2]; Ridgway, Man. N. Amer. Birds, 2nd ed. p. 76 [3]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 425 [4].

Alba, pileo colloque stramineo-fulvo tinctis; tectricibus alarum albis; ala spuria et primariis brunnescenti-nigris, secundariis tamen albis; cauda alba; rectricibus duodecim, nigris; gula nuda nigra: rostro pallide cyanescenti-griseo, basin versus viridescente; regione nuda oculari et rostri lineis nigris; pedibus brunnescenti-nigris, scutis pallide viridescenti-cyaneis vel læte smaragdinis, unguibus albicantibus; iride flavescenti-alba. Long. tota circa 34·0, alæ 19·0, caudæ 7·5, culm. 3·75, tarsi 2·25. (Descr. ad. ex St. Kilda. Mus. Brit.)

♀ *ad.* mari similis.

Juv. Fumoso-brunnea, plumis maculis albis triangularibus terminatis, pileo colloque undique albo minute lineolatim maculatis; abdomine et pectore albo marmoratis, plumis plus minusve celatim albis, brunneo terminatis. (Descr. exempl. ex Anglia meridionali. Mus. Brit.)

Hab. North America, Atlantic coast, from the islands of the Gulf of St. Lawrence to the Gulf of Mexico [2].—Coasts of Western Europe, N. Africa, Madeira, and Canary Is.

The European Gannet is said to wander in winter to the coasts of the Gulf of Mexico, and we therefore include it in our list. The species breeds in various places on the coasts of Canada and the United States.

2. Sula cyanops.

Dysporus cyanops, Sundev. Phys. Tidskr. Lund, i. p. 218, t. 5 (1837) [1].

Sula cyanops, Grayson, Proc. Bost. Soc. N. H. xiv. p. 302 [2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 316 [3]; A. O. U. Check-l. N. Amer. Birds, p. 40 [4]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 75 [5]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 430 [6]; Anthony, Auk, xv. pp. 314 [7], 316 [8], 317 [9].

Alba, alis brunneis; tectricibus alarum medianis et majoribus saturate brunneis, primariis nigricanti-brunneis; cauda saturate brunnea; gula summa et facie laterali antica nudis, linea plumosa gulari fere quadrata: rostro corneo, viridescenti-griseo vel viridescenti-flavo; regione nuda gulari et oculari schistaceis vel cyanescenti-nigris; pedibus schistaceis; iride flava*. Long. tota circa 35·0, alæ 18·0, caudæ 7·0, culm. 4·35, tarsi 2·5. (Descr. exempl. ad. ex Ins. Norfolk. Mus. Brit.)

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* Mr. Ogilvie Grant rightly points out that in the varying colours recorded for this species due allowance is not always made for the age of the birds, and it is evident that the soft parts vary considerably according to whether the individual is young or old (*cf.* Cat. Birds, xxvi. p. 431).

Juv. Brunnea, plumis griseo vel fulvescenti-albo marginatis; gutture brunneo, corpore reliquo subtus albo. (Descr. exempl. juv. ex Ins. Kermadec. Mus. Brit.)

Hab. South Atlantic, South Pacific, and Indian Oceans; West Indies, and northward to Southern Florida [4].—Revillagigedo Is., Socorro I. (*Grayson* [2 3], *Anthony* [8]), San Benedicte I.[7], Clarion I.[9] (*Anthony*).

Though somewhat similar to *S. bassana* in general appearance, the Blue-faced Gannet is distinguished by the form of the line of feathering skirting the throat.

In *S. bassana* there is a band of bare skin down the centre of the throat, the feathered lines of which extend forward in a double point between the rami of the mandible as far as the notch of the maxilla, whereas in *S. cyanops* the line is truncate, with the margin not forked, and falling far short of the notch in the maxilla[6]. Thus the chin and entire throat are bare, and appear in the preserved skin as blackish, having been dark blue in life[7].

Mr. Anthony states that this species was not so common on Socorro Island as it was on San Benedicte[7]; here he found it breeding, but on Clarion the birds were more abundant still, and the nests were found on the beach and up to the top of the island[9].

The nesting-habits are similar to those of the other species of the genus, and but a single chalky-white egg is laid.

3. Sula piscator.

Pelecanus piscator, Linn. Syst. Nat. i. p. 217[1].

Sula piscator, Salv. Ibis, 1864, p. 378[2]; 1866, p. 200[3]; Ridgw. Pr. U. S. Nat. Mus. p. 578[4]; Man. N. Amer. Birds, p. 76[5]; A. O. U. Check-l. N. Amer. Birds, p. 40[6]; Richm. Pr. U. S. Nat. Mus. xvi. p. 531[7]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 432[8].

Alba, tectricibus alarum majoribus et remigibus nigricanti-brunneis, cinereo externe adumbratis, secundariis intimis albis; cauda alba; corpore reliquo subtus albo, subalaribus quoque albis, tectricibus subalaribus externis brunneis, plagam magnam formantibus: rostro cyanescente, basin versus rubescente; pedibus miniatis vel fere coccineis; gula nuda saturate schistacea vel nigra; regione nuda orbitali cyanea; iride grisea. Long. tota circa 26·0, alæ 14·7, caudæ 8·2, culm. 3·35, tarsi 1·35. (Descr. feminæ adultæ ex Half-Moon Cay. Mus. nostr.)

Juv. Fumoso-brunnea, subtus grisescens; alis brunneis, tectricibus alarum majoribus remigibusque conspicue griseo adumbratis: rostro cyanescenti-rubro, basin versus magis coccineo; regione nuda orbitali plumbescente; gula nuda cornea. (Descr. exempl. juv. ex Half-Moon Cay. Mus. nostr.)

Hab. Tropical and Subtropical Oceans north to Florida [6].—British Honduras, Half-Moon Cay (*O. S.*[2 3]); Honduras (*Dyson* [8]), Swan I. (*Townsend* [4]); Nicaragua, Greytown (*Richmond* [7]).

S. piscator belongs to the section of the genus *Sula* in which the feathering of the throat takes a truncate form on the margin of the bare portion of the latter. The adult bird is for the most part white, and the tail-feathers of the same colour, with hoary-grey margins in immature specimens. The young are sooty brown, a little paler on the underparts.

This Gannet, or Booby, is found over the greater part of the tropical and subtropical seas, with the exception of the Pacific coast of America, where *S. nebouxi* takes its place. Mr. Townsend noticed it on Swan Island throughout the month of March. Salvin [2] met with specimens of this species in 1862 on the islands off the coast of British Honduras, where they were nesting on Half-Moon Cay. He states that there were very few mangroves at the place, but the southern portion of the Cay, as well as the whole windward side, was covered with "bush," where they bred in numbers. Every tree had four or five nests. The birds were sitting about, with gaping beaks, completely overcome by the intense heat of the sun, so much so that he thought they were dead; others were resting against a branch, with their heads hanging down and eyes shut. The name of Booby is most appropriate, as they took all interference with the utmost indifference, and with a complaisant grave expression that was laughable to watch. It was impossible to rouse the birds, even when he pulled their tails or fought them for their eggs, nor could he succeed in getting up any excitement in the colony. It was too hot to climb many trees, and, after a long search, he only succeeded in securing four rotten eggs, which were of a chalky-white colour.

4. Sula websteri.

Sula bassana (nec Linn.), Grayson, Proc. Bost. Soc. N. H. xiv. p. 302 [1].

Sula websteri, Rothsch. Bull. B. O. C. vii. p. lii (1898) [2]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 655 [3]; Anthony, Auk, xv. pp. 314 [4], 316 [5], 317 [6].

Sula piscatrix websteri, Rothsch. & Hartert, Nov. Zool. vi. p. 177 [7].

S. piscatori similis, quoad magnitudo et colores, sed cauda saturate cana: rostro quoque graciliore, et rubedine rostri basali magis extensa distinguenda (*teste* Rothschild, *l. c.*).

Hab. Revillagigedo Is., San Benedicte I. (*Anthony* [4]), Socorro I. (*Grayson* [1 2], *Anthony* [5]), Clarion I. (*Webster* [3 5], *Anthony* [6]); Mexico, Isabel I.* (*Grayson* [1]).—Galapagos Archipelago [7].

S. websteri, of which we have not been able to examine a specimen, is described by Mr. Rothschild as resembling *S. piscator* in dimensions, and in the white plumage and hoary grey on the primaries; but it may be at once distinguished by its dark grey tail; the bill is also more slender and the red on the base of the mandible is more extended. The young, when in the grey plumage, are somewhat variable, but differ much from those of *S. piscator*, being paler above and darker below, while the feathers of the back are a uniform brown and not edged with light grey. Mr. Nelson believes this to be the bird which Grayson [1] reported from Isabel Island as *S. bassana*, but the species was not seen by him.

Of the three species observed on the Revillagigedo Islands, Mr. Anthony found this to be by far the most abundant on San Benedicte, nesting on rocks in the thick grass all over the island. He took fresh eggs on May 1st, and on May 17th found a

* Grayson calls this island "Isabella" and Nelson "Isabel": the latter is correct.

second clutch in the same nest. The birds were so tame that some perched on his head and shoulders, and others on the rails of the skiff as he rowed ashore. On Socorro neither this species nor the other Boobies were so common as on San Benedicte; but on Clarion Island *S. websteri* was very abundant, and its nests were seen placed on branches of low shrubby trees.

5. **Sula nebouxi.**

Sula piscator (nec Linn.), Grayson, Pr. Bost. Soc. N. H. xiv. p. 302[1]; Lawr. Mem. Bost. Soc. N. H. ii. p. 316[2].

Sula nebouxi, Milne-Edwards, Ann. Sci. Nat. (6) xiii. art. 4, p. 37, t. 14[3]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 584[4]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 435[5]; Nelson, N. Amer. Faun. no. 14, p. 31[6].

Sula gossi, Ridgw. Auk, v. p. 241[7]; A. O. U. Check-l. N. Amer. Birds, p. 40[8].

Brunnea, dorsi plumis albido marginatis; alis brunneis, primariis nigricantibus; rectricibus medianis albis, reliquis griseis externe saturate brunneis; pileo colloque brunneis, albo striolatim marginatis; collo postico albo; præpectore et corpore reliquo subtus albis; subalaribus griseo-brunneis, externis saturate brunneis, minoribus albidioribus; axillaribus albis: rostro plumbescenti-corneo, ad basin plumbescenti-cæruleo; regione oculari et gula nudis plumbescenti-cæruleis; pedibus læte cæruleis; iride flava. Long. tota circa 29·0, alæ 16·1, caudæ 8·7, culm. 4·1, tarsi 2·0. (Descr. maris adulti ex Ins. Tres Marias. Mus. nostr.)

♀ mari similis, sed major. Long. alæ 17·6, culm. 4·5. (Descr. feminæ adultæ ex Ins. Tres Marias. Mus. nostr.).

Hab. Islands of the Gulf of California[8], San Pedro Martir (*Goss*[7]), San Juanito I. (*Nelson*[6]).—Revillagigedo Is., Socorro I. (*Grayson*[1]); Mexico, Isabel I. (*Grayson*[1], *Nelson*[6]), Coast of Mazatlan (*Bischoff*[2]), Tres Marias Is. (*Forrer*[5], *Nelson*[6]).—Galapagos Archipelago[5]; Chile[5].

S. nebouxi was originally described from Chile[5]; but it has since been found in the Galapagos Archipelago, and along the Pacific coast of Mexico as far north as the islands of the Gulf of California. Mr. Nelson met with the species abundantly on Isabel and the Tres Marias Islands; as regards the former he gives a most interesting account of his observations. The nests were merely hollows in the earth or gravel, or on the grassy beach among the scrubby trees and bushes; when approached, the males usually flew away, leaving the females, which are the larger birds, to protect them. Sitting on their eggs, they fought and screamed savagely, and gave vicious digs with their bill at the legs of anyone who came within striking distance. By the light of a candle, on a calm night, he visited their nesting-place, and found the females sitting on their eggs with the males standing beside them; when he appeared they set up a continuous series of hoarse cries, and, like moths, fascinated by the light, they trooped in single file from right to left in a circle round him. One was suddenly possessed with the desire to run round Mr. Nelson's legs, and, although several times seized by the head and tossed among its companions, repeatedly returned and continued its gyrations.

The males supply the females with food, starting at daybreak to procure fish, often at a distance of thirty miles from the breeding-place, and returning with it early in the afternoon.

6. Sula leucogastra.

Pelecanus sula, Linn. Syst. Nat. i. p. 218 [1].

Sula sula (Linn.), Verr. & Des Murs, Rev. et Mag. Zool. 1860, p. 442 [2]; Ridgw. Pr. U. S. Nat. Mus. viii. p. 356 [3]; Man. N. Amer. Birds, 2nd ed. p. 584 [4]; A. O. U. Check-l. N. Amer. Birds, p. 40 [5]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 436 [6].

Pelicanus leucogaster, Bodd. Tabl. Pl. Enl. p. 57 [7].

Sula leucogastra, Nutting, Pr. U. S. Nat. Mus. v. p. 405 [8]; vi. p. 378 [9]; Ridgw. Pr. U. S. Nat. Mus. x. p. 578 [10].

Sula leucogaster, Richm. Pr. U. S. Nat. Mus. xvi. p. 532 [11].

Sula fusca, Taylor, Ibis 1860, p. 316 [12].

Sula fiber (nec Linn.), Scl. & Salv. Ibis, 1859, p. 233 [13]; Salv. Ibis, 1864, p. 381 [14]; Frantz. J. f. Orn. 1869, p. 379 [15].

Sula sp., Salvad. Boll. Mus. Torino, xiv. no. 339, p. 13 [16].

Fumoso-brunnea, primariis nigricantioribus; rectricibus brunneis, medialiter nigricantibus; pileo colloque undique et præpectore saturatius brunneis, corpore reliquo subtus pure albo, axillaribus quoque albis; subcaudalibus medianis albis, lateralibus brunneis; subalaribus brunneis, medianis nonnullis albis: rostro albicanti-viridi vel viridescenti-cyaneo, basin versus corneo vel cærulescente; facie nuda laterali et gula nuda cyanescentibus vel viridescentibus, interdum flavescentibus; pedibus pallide viridibus vel plumbeo-viridibus, vel etiam flavescentibus; iride argentescenti-alba aut grisea. Long. tota circa 26·0, alæ 14·9, caudæ 7·5, culm. 3·9, tarsi 1·7. (Descr. exempl. adult. ex Panama. Mus. nostr.)

Juv. Fumoso-brunnea, pectore et corpore reliquo subtus pallidioribus, magis grisescentibus, plumis griseo-albo marginatis. (Descr. exempl. juv. ex Half-Moon Cay. Mus. nostr.)

Hab. Western Pacific and Indian Oceans; Atlantic Coasts of Tropical and Subtropical America, north to Georgia [5].—British Honduras, Half-Moon Cay (*O. S.* [14]); Honduras, Bird I., Fonseca Bay (*Taylor* [12]), Swan Island (*Townsend* [10]); Salvador (*O. S.* [13]); Nicaragua, Atlantic Coast (*Richmond* [11]), San Juan del Sur (*Nutting* [9]); Costa Rica, Atlantic Coast (*Capt. Milner* [6]), Puntarenas, Gulf of Nicoya (*v. Frantzius* [15]), La Palma (*Nutting* [8]); Panama (*M'Leannan* [6]), Pearl Islands (*Festa* [16]).

This Gannet is well-known and breeds on both coasts of Central America, but does not extend to the shores of Mexico, where its place is taken by other forms. Salvin captured a bird that flew on board the steamer off the coast of Salvador [13], which he believed to belong to this species; it was not preserved, and may have belonged to the allied *S. brewsteri.* We have examples of *S. leucogastra* from Half-Moon Cay, off the coast of Honduras [14], but none from Guatemala, and no doubt the bird recorded by Count Salvadori [16] from the Pacific coast of Panama is referable to it.

The nesting-habits and eggs are similar to those of the other members of the genus *Sula.*

7. Sula brewsteri.

Sula brewsteri, Goss, Auk, v. p. 242[1]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 40[2]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 585[3]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 440[4]; Anthony, Auk, xv. pp. 314[5], 316[6], 317[7]; Nelson, N. Amer. Faun. no. 14, p. 29[8]; Rothsch. & Hartert, Nov. Zool. vi. p. 179[9].

♂. *S. leucogastræ* similis et notæo fumoso-brunneo; capite albo, collum versus grisescente: rostro cyanescenti-corneo; loris et regione faciali nudis indigotico-cyaneis; gutture nudo livide cyaneo vel sordide schistaceo-cyaneo vix viridi tincto; pedibus viridescentibus vel viridi-flavis. Long. alæ 14·2–14·8, caudæ 7·2–7·5, culm. 3·5–3·7, tarsi 1·65–1·75. (Descr. ex script. Grant, Nelson, &c.)

♀ *ad.* mari similis, sed major, et haud a *S. leucogastra* distinguenda: rostro pallide cyanescenti-corneo; loris schistaceo-cyaneis vel plumbescentibus; regione orbitali et gutture nudis flavescenti-viridibus vel cinerascenti-flavis; pedibus flavescentibus; iride pallide grisea. Long. alæ 15·5–15·9, caudæ 7·2–7·3, culm. 3·7–3·9, tarsi 1·75–1·85. (Descr. ex script. Grant, Nelson, &c.)

Hab. Coasts and Islands of the Eastern South Pacific Ocean, north to Lower California[1], breeding as far north as Georges Island, at the head of the Gulf of California[2].—Revillagigedo Is., San Benedicte[5], Socorro[6] (*Anthony*); Mexico, Coast of Jalisco (*mus. Rothschild*[4]), Piedra Blanca rocks off San Blas, Isabel I., Tres Marias Is., Maria Cleofa I. (*E. W. Nelson*[8]).

Brewster's Gannet was first described by Mr. Goss from the island of San Pedro Martir, in the Gulf of California, where it was breeding[1]. Mr. Nelson[8], in his memoir on the birds of the Tres Marias Islands, states that he found the species very numerous on a small hill on Isabel Island, when he landed on April 22nd, but the birds were not nesting and only came there to roost. They are said to breed on Piedra Blanca, a large rock midway between Isabel and San Blas. Only a few were seen about the Tres Marias, until an islet on the north-west coast of Maria Cleofa, rising from 150 to 200 feet above the sea, was visited on May 30th; there many thousands of Boobies were breeding on the bare top of the rock. In the Revillagigedo Islands Mr. Anthony found the species nesting, and almost as common as *S. cyanops* on San Benedicte. It was not observed west of Rocca Partida, sixty-five miles west of Socorro.

The nesting-habits of this species vary with the locality. At San Pedro Martir, Mr. Goss found but a few old feathers, bits of seaweed, and sticks used as nests on the ledges of the rocks. At San Benedicte, Mr. Anthony says that the nests were all made of sticks and coarse grass in a hollow in the sand or rocks, and that he found fresh eggs on May 17th[5]. In the Tres Marias Islands, Mr. Nelson found the eggs laid on bare places, which were so heated by the sun as to be uncomfortable to the touch. The birds defended their eggs vigorously, keeping up deafening cries of rage and defiance. The nestlings of the few birds which flew away soon succumbed to the great heat of the sun.

Fam. PHALACROCORACIDÆ.

This well-known family consists of the Cormorants, of which only five species are found in Central America.

Following Mr. Pycraft's arrangement of the Steganopodes, we extract from his synopsis the following osteological characters:—"Palatines broad and flat, closely approximated one to the other in the middle line from the posterior nares backwards; postorbital process emarginate; furcula not fused with the carina sterni; a large occipital style or nuchal bone articulating with the supra-occipital." Mr. Ogilvie Grant gives the external characters of the family as follows:—"Bill long, or moderately long, subcylindrical, strongly hooked at the extremity; a long narrow groove on each side, dividing at the nail or dertrum; cutting-edges of mandibles entire. Nostrils rudimentary. A gular pouch, naked anteriorly; neck long and sinuous. Wings moderately long and pointed; quills stiff and strong, the third generally slightly longer than the first and second. Tail rounded or cuneate, composed of 12 or 14 stiff feathers. Tarsus short and compressed; outer toe longest; claws curved, that of the middle toe pectinate" *.

Of the thirty-six species of *Phalacrocorax* admitted by Mr. Ogilvie Grant, five occur within our limits.

PHALACROCORAX.

Phalacrocorax, Brisson, Orn. vi. p. 511 (1760); Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 330.

The characters specified above as those of the family apply equally to the single genus, *Phalacrocorax*.

1. Phalacrocorax pelagicus.

Phalacrocorax pelagicus (Pall.), Herrera, La Nat. (2) i. pp. 188, 330[1]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 44[2]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 80[3]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. pp. 333[4], 337[5], 360[6].

Phalacrocorax pelagicus robustus (Ridgw.), A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 44[7]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 80[8].

Phalacrocorax pelagicus resplendens (Aud.), A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 44[9]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 80[10].

Metallice viridis, bronzino nitens; dorso postico, uropygio et supracaudalibus magis chalybeis, plumulis longitudinalibus albis ornatis; alis caudaque nigris; tectricibus alarum viridi nitentibus; pileo metallice viridi, crista una verticali, altera nuchali ornato; colloque undique et gutture pulchre purpureo-violaceis, plumulis albis ornatis; corpore reliquo subtus nitenti-viridi, hypochondriis imis plagam magnam albam exhibentibus: rostro nigricanti-corneo, basin versus pallidiore; facie et mento nudis saturate grisescenti-brunneis, papillis brunnescenti-aurantiacis vel sordide miniatis ornatis; pedibus nigris; iride florescenti-viridi vel thalassina. Long. tot. circa 28·0, alæ 9·6, caudæ 5·5, culm. 1·9, tarsi 1·85. (Descr. maris ad. ex San Francisco. Mus. nostr.)

Ptil. hiem. similis adulto in ptilosi nuptiali, sed plumulis colli et uropygii albis et plaga alba hypochondriali absente. (Descr. ad. hiem. ex Ins. Farallone. Mus. nostr.)

Juv. Omnino brunnescens, vix viridi tinctus, collo paullulum violaceo nitente.

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* *Cf.* 'Catalogue of Birds,' xxvi. p. 332.

Hab. Pacific Coasts of Northern Asia and North America, south to Cape San Lucas [7].—Mexico, Mazatlan [8], Valley of Mexico (*Herrera* [1]).

This species belongs to the group of the genus which possesses twelve tail-feathers. In breeding-plumage it has two distinct crests, one on the crown, and a second on the nape, and a large white patch on each flank. The forehead is feathered and the wing-coverts and scapulars are greenish and violet-bronze with green reflections [4]. In non-breeding plumage it may be recognized by its greenish-black under surface and feathered forehead, and by the absence of black marginal bands to the feathers of the back and scapulars, which are greenish and purple-bronze with green reflections, the neck being deep violet-blue [5].

Three races of this Cormorant are admitted by American ornithologists, of which two, *P. pelagicus*, and its ally, *P. robustus*, are confined to the Western Pacific—the first inhabiting the Aleutian Islands, the second extending from Alaska to Washington Territory, whence it is replaced southward by *P. resplendens*, which is the form said to extend to the coast of Mazatlan. Mr. Ogilvie Grant gives a series of measurements to show that the difference in size of bill, on which these forms have been separated, is not a constant feature, and that in this respect the three races merge into one. We therefore follow him in uniting them.

Beyond the fact that the species is said to reach Cape San Lucas and Mazatlan, and the statement of Herrera [1] that it occurs in the Valley of Mexico, we have no notes on its occurrence in any other part of the Central-American region. This author also mentions *P. mexicanus* as an inhabitant of the Valley of Mexico, so that it is evident that he was acquainted with two species, and his identification of *P. pelagicus* is therefore probably correct.

2. **Phalacrocorax auritus.**

Carbo auritus, Less. Traité d'Orn. p. 605 [1].

Phalacrocorax auritus, Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 333 [2], 337 [3], 370 [4].

Phalacrocorax dilophus, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 42 [5]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 78 [6].

Phalacrocorax floridanus (Audub.), Salv. Ibis, 1864, p. 374 [7]; 1866, p. 200 [8]; 1889, p. 376 [9].

Phalacrocorax dilophus floridanus, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 42 [10]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 78 [11].

Ptil. æstiv. Supra bronzino-brunneus, plumis late nigro marginatis; primariis nigricantibus; dorso postico, uropygio et supracaudalibus chalybeo-nigris; cauda nigra; crista elongata supraciliari utrinque nigra; pileo cum collo et corpore subtus toto nigris, chalybeo-viridi vix nitentibus; maxilla nigra, griseo vel flavo lateraliter marmorata, mandibula flavescente vel pallide cyanea, fusco marmorata; loris, regione oculari et gutturis partibus nudis læte aurantiacis; palpebris et palato læte cyaneis; pedibus nigris; iride læte graminea. Long. tota circa 29·0, alæ 12·0, caudæ 5·9, culm. 2·1, tarsi 2·15. (Descr. maris adulti ex Tarpon Springs. Mus. nostr.)

♀ mari similis, sed paullo minor.

Ptil. hiem. similis ptilosi æstivæ, sed cristarum plumis absentibus; loris gulaque nudis flavis, palpebris et palato minime cyaneis.

Juv. Supra griseo-bronzinus, plumis nigro marginatis; pileo et collo postico saturate brunneis; facie laterali et corpore subtus cinerascenti-brunneis; abdomine, hypochondriis et subcaudalibus nigris.

Hab. Eastern North America generally, breeding to the northward of the United States (*P. auritus*); South Atlantic and Gulf States and Lower Mississippi Valley, north to Southern Illinois [6 11] (*P. floridanus*).—Mexico, Cozumel I. (*Gaumer* [9]); British Honduras, Turneff Lagoon [7], Man-o'-War Cay, Belize coast [8] (*O. S.*).

This species, like the preceding, has twelve tail-feathers, and is therefore an ally of *P. pelagicus*, but differs from the latter in the black-edged feathering of the upper surface. It belongs, however, to a different group of Cormorants, as in the breeding-season no white flank-spots are assumed, and the white ornamental plumelets are otherwise disposed, taking the form of two lateral tufts, one on each side of the crown. These crests, which spring from the side of the head just behind the eye, are either black, or white intermixed with a few black plumes.

Four races of this form of Crested Cormorant are recognized by American ornithologists, viz.: *P. auritus* (i. e. *P. dilophus*, auct.) and *P. floridanus* of Eastern North America, both with black crests; these are replaced on the Pacific coast by *P. cincinnatus* and *P. albociliatus*, in which the crests are wholly or partially white.

We follow Mr. Ogilvie Grant in recognizing two forms only, as he has pointed out that the characters of *P. auritus* and *P. floridanus* merge into each other, and the same may be said of *P. cincinnatus* and *P. albociliatus*.

Of *P. auritus* we have received a few examples from Cozumel Island, off the coast of Yucatan, from Dr. Gaumer [9]; and Salvin met with the species on Man-o'-War Cay, off the Belize coast [8]. After climbing along the matted tree-roots to the northern end of the Cay, he found the birds sitting on the outer boughs of the fringe of mangroves some twelve feet above the water. It was the breeding-season, and the nests, which were strongly built of sticks, hollowed inside, and partly lined with freshly-picked mangrove-leaves, contained from one to four chalky-white eggs, the latter number appearing to be the full complement.

3. **Phalacrocorax cincinnatus.**

Carbo cincinatus, Brandt, Bull. Acad. St. Pétersb. iii. p. 55 [1].

Phalacrocorax cincinatus, Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 373 [2].

Phalacrocorax dilophus cincinatus, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 43 [3]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 78 [4].

Phalacrocorax dilophus albociliatus, Ridgw. Water Birds N. Amer. ii. p. 150 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 43 [6]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 78 [7].

P. aurito similis, sed cristæ plumis in ptilosi æstiva plerumque vel omnino albis, rarius nigro mixtis: rostro, pedibus, iride, facie gulaque nudis sicut in *P. aurito* coloratis. Long. tota circa 30·5, alæ 13·0, caudæ 5·5, culm. 2·25, tarsi 2·6. (Descr. exempl. ad. ex Aleutian Is. Mus. Brit.)

Hab. Pacific Coast of North America, from Alaska to the Gulf of California and the Revillagigedo Islands [6].

This species is closely allied to *P. auritus* and is divided by the American ornithologists into two races, a northern and a southern one, viz. *P. cincinnatus* and *P. albociliatus*. These are separated by their size, but the differences are so slight that we agree with Mr. Ogilvie Grant that they cannot be upheld. He considers *P. cincinnatus* to be only a subspecies of *P. auritus*, as the distinction of the black and white crest-feathers is apparently not constant.

P. albociliatus, which is the southern form of White-crested Cormorant, is said to inhabit Southern California, whence it extends to the island of Socorro [7]. Mr. Anthony (Auk, 1898, p. 311) did not meet with it there or on the other Revillagigedo Islands.

4. Phalacrocorax vigua.

Hydrocorax vigua, Vieill. N. Dict. d'Hist. Nat. viii. p. 90 [1].

Phalacrocorax vigua, Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 378 [2]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 13 [3].

Halieus brasilianus, Licht. Preis-Verz. Mex. Vög. p. 3 (1830) [4] (*cf.* Cab. J. f. Orn. 1863, p. 59 [5]); Wagler, Isis, 1831, p. 530 [6].

Carbo brasilianus, Cassin, Pr. Acad. Philad. 1860, p. 197 [7].

Phalacrocorax brasilianus, Salv. P. Z. S. 1870, p. 219 [8]; Nutting, Pr. U. S. Nat. Mus. vi. pp. 378 [9], 396 [10]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 132 [11].

Phalacrocorax sp., Richm. Pr. U. S. Nat. Mus. xvi. p. 532 [12].

Ptil. æstiv. Supra saturate cinereo-bronzinus, plumis nigro marginatis quasi lanceolatis, tectricibus alarum dorso concoloribus; dorso postico, uropygio et supracaudalibus nigris, vix viridi nitentibus; pileo et collo undique cum corpore subtus toto nigris, vix viridi nitentibus; primariis et rectricibus nigris; cristæ elongatæ utrinque postocularis plumis albis filamentosis; regione oculari, facie laterali et collo laterali plumulis filamentosis albis ornatis; fascia albida gulam et rictum nudum marginante; iride saturate cærulea. Long. tota circa 30·0, alæ 11·3, caudæ 6·35, culm. 2·2, tarsi 2·2. (Descr. maris adulti ex Chuput, Patagonia. Mus. Brit.)

Ptil. hiem. ptilosi æstivæ similis, sed sordidior, colli plumulis albis ornamentalibus eisque gulam marginantibus absentibus. (Descr. maris adulti ex Huamachal. Mus. nostr.)

Juv. Magis brunnescens, notæi plumis sicut in adultis lanceolatis, dorso postico et uropygio nigris; pileo colloque toto et corpore subtus brunneis, illis paullo saturatioribus, hypochondriis nigricantibus; gula nuda albo distincte marginata. (Descr. exempl. juv. ex Costa Rica. Mus. nostr.)

Hab. North America, Texas [2].—Mexico (*Wagler* [6], *Deppe & Schiede* [4 5]); Guatemala, Lake of Peten, Huamachal (*O. S.* [2]); Nicaragua, Lake of Nicaragua (*Richmond* [12]), San Juan del Sur [9], Ometépe [10] (*Nutting*), Rio Frio, Rio Escondido (*Richmond* [12]); Costa Rica (*Endres* [2]), Rio Sucio (*Zeledon* [11]); Panama, Castillo (*E. Arcé* [8]), Rio Coconati and Rio Sabana (*Festa* [3]).—Coasts and Lakes of South America to Patagonia and Chile [2].

P. vigua and its close ally, *P. mexicanus*, differ from the other Cormorants of Central America in the lanceolate form of the dorsal plumes, which are edged with

black, as in *P. auritus*. The species is found over the greater part of South America, from Patagonia northward to the coasts of Central America and Texas [2]. We have no specimens from Mexico in our collection, and it is uncertain whether the Cormorant recorded by Herrera as *P. pelagicus*, from the Valley of Mexico, has been correctly identified. Salvin shot one on the Lake of Peten, where Leyland also noticed it in flocks of several hundreds on the islands of the lake. It appears to be abundant in Nicaragua, Costa Rica, and Panama.

Prodigious numbers of these birds often assemble together, and Mr. Richmond saw over a thousand on the Lake of Nicaragua, where he was informed that as many as four or five thousand are sometimes to be seen nesting in the vicinity.

5. **Phalacrocorax mexicanus.**

Carbo mexicanus, Brandt, Bull. Acad. St. Pétersb. iii. p. 56 [1]; Salv. Ibis, 1865, p. 192 [2].

Phalacrocorax mexicanus, Scl. P. Z. S. 1857, p. 207 [3]; Moore, P. Z. S. 1859, p. 65 [4]; Scl. & Salv. Ibis, 1859, p. 233 [5]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 169 [6]; Herrera, La Nat. (2) i. pp. 188, 330 [7]; Salv. Ibis, 1889, p. 376 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 43 [9]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 79 [10]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 381 [11].

Graculus mexicanus, Lawr. Mem. Bost. Soc. N. H. ii. p. 316 [12]; Bull. U. S. Nat. Mus. no. 4, p. 50 [13]; Dugès, La Nat. i. p. 142 [14].

Graculus americanus (lapsu), Sumichr. La Nat. v. p. 235 [15].

Ptil. æstiv. P. viguæ similis, sed minor; gula nuda aurantiaca; iride viridi. Long. tota circa 27·5, alæ 10·1, caudæ 5·8, culm. 1·8, tarsi 1·8. (Descr. feminæ adultæ ex Corpus Christi, Texas. Mus. nostr.)

Ptil. hiem. Differt eodem modo sicut in *P. vigua*: rostro corneo, culmine et mandibula basi fuscis; gula nuda brunnescente; pedibus nigris; iride viridi.

Hab. North America, Southern United States, north in the interior to Kansas and Southern Illinois [9 10], Texas [11].—Mexico [1], Tampico, Valles, San Luis Potosi, Chapala, Jalisco (*Richardson* [11]), Valley of Mexico (*Herrera* [7]), Presidio de Mazatlan (*Forrer* [11]), Mazatlan (*Grayson*, *Bischoff* [12]), Guanajuato (*Dugès* [14]), Santa Ana in Vera Cruz (*Ferrari-Perez* [6]), Santa Ana, near Guadalajara, Jalisco (*Lloyd*), Jalapa (*Sallé* [3]), Santa Efigenia [13], Lake Patzcuaro, Cosamaloapam, Tehuantepec, Tapanatepec, Tonala (*Sumichrast* [15]), Cozumel I. (*Gaumer* [8]); Guatemala, Lake of Peten (*Leyland* [4], *O. S.* [11]), Lake of Yzabal (*O. S.*), Dueñas, Chiapam (*O. S. & F. D. G.* [2 4]).

The Mexican Cormorant resembles *P. vigua* and apparently goes through similar changes of plumage, but it is not nearly so large; the bill, too, is very much smaller. We have received several specimens from Texas, collected by Mr. Armstrong, mostly at Corpus Christi and Brownsville, and the localities quoted above show that it occurs in most provinces of Western Mexico. Grayson says that at Mazatlan the bird is common at all seasons [12]. Herrera records the species from the Valley of Mexico [7],

and Ferrari-Perez from Santa Ana in Vera Cruz [6]. It was, therefore, doubtless this bird, and not *P. vigua*, which was procured by Sallé at Jalapa [3].

Both *P. mexicanus* and *P. vigua* were obtained by Salvin on the Lake of Peten, and we procured the former at Dueñas and Chiapam; here they rested in the trees or swam about in the muddy water.

We have no record of its nesting within our limits, but it breeds in Texas, and may perhaps do so in Northern Mexico.

Fam. PLOTIDÆ.

In outward appearance the Darters bear considerable likeness to the Cormorants; there are, however, many anatomical and external characters which distinguish this extraordinary family. Mr. Pycraft has pointed out some of the osteological features, the most curious of these being the "kink" in the neck, the muscles of which can be suddenly relaxed like a spring, enabling the bird to dart forward its head and seize its prey. The bill is a formidable weapon, being sharply pointed and armed with back-set serrations, so that the escape of a fish when once transfixed is impossible, and many ugly wounds have been inflicted on those who have attempted to capture disabled birds. Another remarkable feature is the transverse rib on the inner secondaries and on the middle tail-feathers. The claw of the middle toe is pectinate, *i. e.* has a comb-like process attached to it.

PLOTUS.

Anhinga, Briss. Orn. vi. p. 476 (1760).
Plotus, Linn. Syst. Nat. i. p. 218 (1766).

The generic name *Plotus* was established by Linnæus in 1766; under the Strickландian Code, which is followed by the majority of British zoologists, the earlier appellation of *Anhinga* of Brisson is untenable. The characters of the family are those of its single genus, *Plotus*.

1. Plotus anhinga.

L'Anhinga, Briss. Orn. vi. p. 476 [1].

Plotus anhinga, Linn. Syst. Nat. i. p. 218 [2]; Scl. P. Z. S. 1857, p. 207 [3]; 1859, p. 369 [4]; Moore, P. Z. S. 1859, p. 65 [5]; Scl. & Salv. Ibis, 1859, p. 233 [6]; Taylor, Ibis, 1860, p. 316 [7]; Cass. Pr. Philad. Acad. 1860, p. 197 [8]; Frantz. J. f. Orn. 1869, p. 379 [9]; Dugès, La Nat. i. p. 142 [10]; Salv. P. Z. S. 1870, p. 219 [11]; Finsch, Abh. naturw. Ver. Bremen, 1870, p. 362 [12]; Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [13]; Bull. U. S. Nat. Mus. no. 4, p. 50 [14]; Sumichr. La Nat. v. p. 234 [15]; Nutting, Pr. U. S. Nat. Mus. v. p. 405 [16]; vi. p. 378 [17]; Salvin, Ibis, 1889, p. 376 [18]; Ogilvie Grant, Cat. Birds Brit. Mus. xxvi. p. 419 [19].

Anhinga anhinga, Ridgw. Man. N. Amer. Birds, p. 77 [20]; Herrera, La Nat. (2) i. pp. 188 [21], 330 [22]; Stone, Pr. Acad. Philad. 1890, p. 203 [23]; Bryant, Zoe, ii. p. 49 [24]; Richm. Pr. U. S. Nat. Mus. xvi. p. 53 [25]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 41 [26]; Ridgw. Man. N. Amer. Birds, 2nd ed. p. 77 [27].

Ptil. æstiv. Niger, viridi-nitens; interscapulio summo et laterali cum tectricibus alarum minimis maculis ovatis albis minutis ornatis; scapularibus et secundariis intimis griseo-albo longitudinaliter conspicue decoratis; tectricibus medianis et majoribus griseo-albis concoloribus; remigibus et rectricibus nigris, his pallide ochraceo terminatis, medianis transversim indentatis; pileo colloque undique cum corpore subtus toto nigris, viridi nitentibus; pileo cristato et plumulis albis ornato; nucha et collo postico plumulis filamentosis albis et brunneis decoratis; maxilla sordide olivacea, mandibula flava, margine et apice viridibus; regione oculari nuda cyanescenti-viridi; mento nudo læte aurantiaco; tarso antice sordide olivaceo, postice flavo, membrano interdigitali quoque flavo; iride læte coccinea. Long. tota circa 30·0, alæ 12·6, caudæ 10·2, culm. 3·15, tarsi 1·35. (Descr. exempl. ad. ex Nicoya, Costa Rica. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed plumis filamentosis ornamentalibus nullis.

♀ *ptil. æstiv.* mari similis, sed pileo colloque aliter coloratis, minime viridi-nigris; pileo et collo postico brunneis, illo plumulis albis ornato; interscapulio brunneo, maculis parvis ovatis albis notato; facie laterali gulaque albicanti-brunneis, gutture imo et præpectore saturatioribus, vinaceo-brunneis; præpectore imo fascia vinaceo-castanea circumdato, corpore reliquo subtus viridi-nigro. Long. tota circa 30·0, alæ 12·5. (Descr. feminæ ex Castillo, Panama. Mus. nostr.)

Juv. feminæ adultæ similis, sed brunnescentior, pectore et abdomine brunneis, fascia præpectorali castanea absente, gutture brunneo, præpectore albicante; notæo brunnescente, plumis obscure cinereo striatis, tectricibus alarum medianis sordide cinerascentibus, basin versus nigricantibus; fasciis indentatis rectricum medianarum absentibus. (Descr. exempl. juv. ex Peten. Mus. nostr.)

Hab. North America, north to the Carolinas, the mouth of the Ohio River, and Southern Kansas [26].—Mexico, Tampico (*Richardson* [19]), Rio Mazatlan, Rio Santiago (*Bischoff* [13], *Grayson* [12 13]), Tepic [13 24], Lake Chapala [13] (*Grayson*), Guanajuato, Guadalajara (*Dugès* [10]), Cosamaloapam, Vera Cruz, Santa Efigenia, Tehuantepec, Tonala (*Sumichrast* [14 15]), Valley of Mexico (*Herrera* [21 22]), Jalapa (*Sallé* [3], *de Oca* [4 13]), Progreso, Yucatan (*Stone & Baker* [23]), Cozumel I. (*Gaumer* [18 19]); Guatemala, Lake of Peten (*Leyland* [5 6], *O. S.* [19]), Lake of Yzamal (*O. S.* [19]); Honduras, Lake of Yojoa (*Taylor* [7]); Nicaragua, Rio Frio, Rio Escondido (*Richmond* [25]), San Juan del Sur (*Nutting* [17]); Costa Rica, San José (*v. Frantzius* [9]), Nicoya (*E. Arcé* [19]), La Palma (*Nutting* [16]); Panama, Laguna del Castillo (*E. Arcé* [11 19]).—South America, from Colombia and Guiana to Amazonia and Brazil [19].

The Darter is found in the Southern States of North America, breeding from North Carolina to the Gulf States and Florida, but is unknown on the Pacific side.

The species is plentiful in Western Mexico, on the rivers of Mazatlan and Tepic, and on Lake Chapala, near Guadalajara, and southwards to Panama. It chiefly frequents the freshwater streams and lakes, but is occasionally found on the salt lagoons near the sea, or wherever an abundance of small fish is to be found. The bird pursues its prey at great speed beneath the water, only returning to the surface to devour it, or, when satisfied, to sit upon a bough or log with outstretched wings to dry in the sun. Notwithstanding its heavy flight, the Darter drops noiselessly into

the water, reappearing at a considerable distance, resting, when undisturbed, upon the surface, but at the approach of danger sinking its body till only the head and neck are visible.

The birds build in company, the nests being constructed of sticks and water-plants. The eggs are chalky-white, oval in shape, and usually four in number.

Order HERODIONES.

In this Order are comprised the Herons, the Storks, the Spoonbills, and the Ibises, which agree with the Steganopodes in having a desmognathous palate. The hallux is free, and there is only a small web near the base of the inner toe, while the middle and outer ones are connected near their base by a rather broad membrane. Many other osteological and anatomical characters could be mentioned, but a further discussion of these points is unnecessary here, as the Herodiones constitute a very well-marked group recognized by every student of ornithology. The Herons and Storks have holorhinal nostrils, while the Spoonbills and Ibises have schizorhinal nostrils, a character which has induced some modern ornithologists to rank the two latter families as a separate suborder.

Following, with certain modifications, the classifications of Mr. Ridgway, in his "Studies of the American Herodiones" (Bull. U. S. Geol. & Geogr. Survey, iv. pp. 219–251), and of Dr. Bowdler Sharpe (Cat. Birds Brit. Mus. xxvi. p. 56), we divide the Herons into three families—the Ardeidæ, Cancromidæ, and Ciconiidæ.

Fam. ARDEIDÆ.

The Herons and Bitterns have a long and pointed bill, notched near the end of the upper mandible, but without a distinct hook, and higher than it is broad. The loral space is bare and generally brightly coloured, and the claw of the middle toe is pectinated, having a comb-like edge, the hind toe is the same length as the others, and "powder-down" patches are present.

Two subfamilies may be recognized, viz. the Ardeinæ or true Herons, and the Botaurinæ or Bitterns, the latter having only ten tail-feathers instead of twelve, as in the former group.

Subfam. *ARDEINÆ.*

In the true Herons, according to Mr. Ridgway (*tom. cit.* p. 223), the outer toe is either equal to or decidedly longer than the inner one, and the claws are short and generally strongly curved. Three pairs of "powder-down" patches are present. The rectrices are long, rather stiff, and *twelve* in number.

ARDEA.

Ardea, Linn. Syst. Nat. i. p. 283 (1766); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 66 (1898).

In our arrangement of the Herons we prefer to follow the classification of the American ornithologists, who group these birds and the Egrets under one comprehensive genus *Ardea*, with a due recognition of the subgeneric divisions—*Herodias*, *Florida*, *Dicromanassa*, *Hydranassa*, and *Butorides*, all of which are characterized as distinct genera in the 'Catalogue of Birds' by Dr. Bowdler Sharpe, who also separates *Agamia* from the genus *Ardea*.

The following sections or subgenera may be recognized :—

a. Bare portion of tibio-tarsus equal to or exceeding the length of the inner toe and claw; edge of mandibles distinctly serrated, with a faintly indicated notch before the tip of the maxilla; no dorsal train; head crested with ornamental plumes on the nape . . . . . *Ardea*.

b. Mandibles not serrated near the ends, the maxilla with a distinct sub-terminal notch; bill long, but the culmen not exceeding the length of the middle toe and claw; no crest-plumes, but a well-developed dorsal train . . . . . *Herodias*.

c. Bill as above, but with long crest-plumes and a dorsal train reaching beyond the tail; on the breast elongated ornamental plumes. Young birds white . *Florida*.

d. Bill long, the culmen exceeding the length of the middle toe and claw; tarsus longer than bill, twice the length of the outer toe and claw; dorsal train extending far beyond the tail; nuchal crest and neck-frill composed of very long lanceolate feathers like the ornamental plumes of the breast . . . . *Dichromanassa*.

e. Bill as above; tarsus moderately long, not twice the length of the outer toe and claw; a very dense dorsal train of decomposed feathers. Plumage white . *Leucophoyx*.

f. Bill longer than tarsus, dorsal train extending beyond the tail; nape crested and continued into the neck-frill; nuchal crest-feathers very broad, as also the ornamental plumes of the fore-neck . . . . . *Hydranassa*.

g. Bare portion of the tibio-tarsus less than the length of the inner toe; bill very long, and equal to the length of the tarsus and the middle toe and claw combined . . . . . *Agamia*.

1. Ardea herodias *.

Ardea herodias, Linn. Syst. Nat. i. p. 237 [1]; Scl. & Salv. Ibis, 1859, p. 226 [2]; Cass. Pr. Acad. Philad. 1860, p. 196 [3]; Lawr. Ann. Lyc. N. Y. viii. p. 12 [4]; ix. pp. 142 [5], 210 [6]; Mem. Bost. Soc. N. H. ii. p. 310 [7]; Bull. U. S. Nat. Mus. no. 4, p. 48 [8]; Salv. Ibis, 1865, p. 193 [9]; Cat. Strickl. Coll. p. 515 [10]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 285 [11]; Dugès, La Nat. i. p. 142 [12]; Frantz. J. f. Orn. 1869, p. 376 [13]; Sumichr. La Nat. v. p. 233 [14]; Nutting, Pr. U. S. Nat. Mus. vi. p. 379 [15]; Herrera, La Nat. (2) i. pp. 185 [16], 327 [17]; Stone, Pr. Acad. Philad. 1890, p. 203 [18]; Cherrie, Auk, 1892, p. 329 [19]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527 [20];

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* Mr. Frank M. Chapman has recently separated (April 1901) the Great Blue Heron of N.W. America as *Ardea herodias fannini*.

Allen, Bull. Amer. Mus. N. H. v. p. 33[21]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 71[22]; Chapman, Bull. Amer. Mus. N. H. viii. p. 289[23]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 80[24]; Nelson, N. Amer. Fauna, no. 14, p. 33[25]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 11[26]; Oates, Cat. Eggs Brit. Mus. ii. p. 114[27].

Ardea lessoni, Wagler, Isis, 1831, p. 531[28].

Supra cinerea, plumis scapularibus ornamentalibus elongatis, pallidioribus et dilutius cinerascentibus; tectricibus alarum majoribus etiam pallide cinerascentibus; tectricibus primariorum remigibusque nigris, secundariis extus vix cinerascentibus, his vero intimis dorso concoloribus; rectricibus cinereis; pileo medialiter albo, lateraliter nigro, fasciam latam nigram utrinque formante, cum plumis nigris nuchalibus conjuncto; collo undique cinerascenti-brunneo; striga superciliari angusta, facie laterali gulaque albis; gutture medio albo, striis longitudinalibus bipartitis nigris et rufescentibus ornato; colli laterali plumis elongatis, aut albis aut medialiter nigro lineatis, decorato; pectoris lateribus nigris; pectore medio et abdomine albis, plus minusve nigro marginatis; abdomine lateraliter nigro; subcaudalibus albis, vix rufo lavatis; tibiis cinnamomeis; hypochondriis, cum subalaribus et axillaribus, remigibusque intus cinereis; margine alari cinnamomeo; maxilla nigra, tomio corneo, mandibula pallide thalassina, versus apicem cornea; palpebris et loris læte viridibus; tibiis et digitorum palmis læte viridibus, pedibus aliter nigris; iride læte flava. Long. tota circa 32·0, alæ 19·0, caudæ 6·7, culm. 5·3, tarsi 6·75. (Descr. maris adulti ex Bolaños, Jalisco. Mus. nostr.)

♀ **mari** similis. Long. tota circa 30·0, alæ 17·0. (Descr. feminæ ad. ex Bolaños. Mus. nostr.)

Juv. Supra grisea, plumis plus minusve pallide cinnamomeo vel fulvo marginatis; tectricibus alarum pallide cinnamomeo marginatis, majoribus quoque macula alba terminatis; remigibus nigris; rectricibus cinereis; pileo cineraceo, vix cristato, lateraliter et versus nucham nigricante; genis et gula albis; facie laterali colloque cineraceis albido striolatis, hujus lateribus ochraceo striolatis; corpore subtus medio albo, plumis cinereo marginatis, nonnullis gutturalibus nigro et rufo striolatis; tibiis pallide cinnamomeis; corporis lateribus et subalaribus cinereis, margine alari cinnamomeo. (Descr. av. juv. ex Presidio. Mus. nostr.)

Hab. North America from the Arctic Regions southward[22].—Mexico, generally (*Sumichrast*[14]), San Diego, Sonora (*Robinette*[21]), Presidio de Mazatlan (*Forrer*[24]), Mazatlan (*Bischoff*[7], *Grayson*[7]), Tres Marias Islands (*Grayson*[11], *Nelson*[25]), Bolaños, Jalisco (*Richardson*[24]), Guanajuato (*Dugès*[12]), Valley of Mexico (*Herrera*[16 17]), Jalapa, Vera Cruz (*Ferrari-Perez*[24]), Tehuantepec city (*Sumichrast*[8]), Yucatan, Progreso (*Stone & Baker*[18]), Merida (*Schott*[6]), Chichén-Itzá (*Chapman*[23]); Guatemala (*Constancia*[10]), Dueñas[2], Rio Guacalate[2], Chiapam[9], San Gerónimo[24] (*O. S.*); Nicaragua, Rio Escondido (*Richmond*[20]); Costa Rica (*Carmiol*[5], *v. Frantzius*[5]), San Juan del Sur (*Nutting*[15]), Port Limon (*Milner*[24]), San Antonio (*v. Frantzius*[13]), San José (*Cherrie*[19], *v. Frantzius*[24]), San José, San Lucas, La Carpentera, Bebedero, Miravalles (*Underwood*); Panama (*M'Leannan*), Laguna de Pita (*Festa*[26]).—South America, Colombia[3], Venezuela, Galapagos Is.[25]; West Indies.

A. herodias appears to be the American representative of the Common Heron (*A. cinerea*) of Europe, which it resembles in size, plumage, and habits. This species is found throughout the greater part of North America, and breeds in suitable places from the Atlantic to the Pacific, as well as in Cuba and some of the West-Indian Islands. It appears to be a resident in Northern Mexico, but in other parts of Central America the bird is chiefly known as a winter visitor.

Like the other large Herons, this is a very shy bird, and it may be seen standing motionless by the sides of streams or lagoons waiting for its prey, which consists chiefly of fish, though it also captures mice, frogs, and insects, and is even said to devour small birds.

The nest is built in trees at varying heights from the ground, and mostly in swampy country; it is a large structure of sticks collected by the male and arranged by the female. The eggs are greenish-blue, usually three in number, but in more southern localities they vary from four to five, and occasionally six are found. Both sexes take their share of incubation, and the young birds remain in the nest till they are nearly full-grown.

2. **Ardea egretta.**

Ardea egretta, Wilson, Amer. Orn. vii. p. 106, t. 61. f. 4[1]; Wagler, Isis, 1831, p. 531[2]; Salv. Cat. Strickl. Coll. p. 516[3]; P. Z. S. 1883, p. 427[4]; Ibis, 1889, p. 376[5]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 169[6]; Zeled. An. Mus. Nac. Costa Rica, i. p. 130 (1887)[7]; Stone, Pr. Acad. Philad. 1890, p. 203[8]; Cherrie, Auk, 1892, p. 329[9]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527[10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 71[11]; Underwood, Ibis, 1896, p. 450[12]; Nelson, N. Amer. Fauna, no. 14, p. 33[13].

Herodias egretta, Scl. P. Z. S. 1859, p. 369[14]; 1860, p. 253[15]; Scl. & Salv. Ibis, 1859, p. 226[16]; P. Z. S. 1864, p. 371[17]; Lawr. Ann. Lyc. N. Y. viii. p. 12[18]; ix. p. 142[19]; Mem. Bost. Soc. N. H. ii. p. 310[20]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 285[21]; Nutting, Pr. U. S. Nat. Mus. v. p. 406[22]; vi. p. 379[23]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 95[24]; Oates, Cat. Eggs Brit. Mus. ii. p. 116[25].

Ardea gazetta, Licht. Preis-Verz. Mex. Vög. p. 3[26]; Cab. J. f. Orn. 1863, p. 59[27].

Ardea leuce, v. Frantz. J. f. Orn. 1869, p. 376[28]; Dugès, La Nat. i. p. 142[29]; Sumichr. La Nat. v. p. 233[30].

Ptil. æstiv. Alba, plumis dorsalibus ornamentalibus longissimis: rostro et plaga nuchali lorali flavis, hac vix viridi tincta; maxilla plus minusve nigricante; pedibus omnino nigris; iride flava. Long. tota circa 38·0, alæ 15·6, caudæ 5·5, culm. 4·45, tarsi 5·95. (Descr. maris adulti ex Momotombo, Nicaragua. Mus. nostr.)

♀. *Ptil. æstiv.* mari similis, pure alba, et plumis dorsalibus ornamentalibus decorata. Long. tota circa 33, alæ 14·1. (Descr. feminæ adultæ ex Presidio, Mexico. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed plumis ornamentalibus nullis distinguenda.

Juv. adultis similis, sed ptilosi molliori et magis decomposita: rostro flavo apicem versus nigro distinguendus.

Hab. Temperate North America southward from New Jersey, Minnesota, and Oregon[11]. —Mexico generally (*Sumichrast*[30]), Ciudad in Durango (*Forrer*[24]), Mazatlan (*Bischoff*[20], *Grayson*[20]), Rio de Coahuayana (*Xantus*[20]), Presidio de Mazatlan (*Forrer*[25]), Tres Marias Is. (*Grayson*[20 21], *Nelson*[13]), Santana, Guadalajara, Jalisco (*Lloyd*[24]), Guanajuato (*Dugès*[29]), Acapulco (*Markham*[25]), Tamaulipas (*Richardson*[24]), San Baltazar, Puebla (*Ferrari-Perez*[24]), Vera Cruz (*Sallé*[15]), Jalapa (*de Oca*[14], *Ferrari-Perez*[6]), coast of Yucatan (*Stone & Baker*[8]), Cozumel I. (*Gaumer*[5 24]); Guatemala (*Constancia*[3]), Lake of Dueñas, Yzabal (*O. S.*[16 24]); Nicaragua, San Juan del Sur (*Nutting*[23]), Lake of Nicaragua, Rio Escondido

(*Richmond* [10]); Costa Rica (*Carmiol* [19], *v. Frantzius* [19 28]), San José (*Cherrie* [9], *Zeledon* [7]), Desamparados, Cartago (*Zeledon* [7]), La Palma (*Nutting* [22]), San Lucas, Bebedero, Miravalles [12] (*Underwood*); Panama (*M'Leannan* [17 18]), Bay of Panama (*Kellett & Wood* [24]).—South America to Chile and Patagonia [24].

This Great White Heron is the American representative of *Ardea alba* of the Old World. It has an extended breeding-range in Temperate North America, from the Columbia River on the west coast to New Jersey on the east; in Central and South America, though for the most part a winter visitant, nesting-colonies are occasionally found. *A. egretta* has been recorded by Grayson as a permanent resident at Mazatlan, and by Mr. Cherrie as an inhabitant of Costa Rica, but the bird is only seen about San José towards the end of the rainy, and the beginning of the dry, season.

Mr. Richmond found it breeding abundantly on the islands in the Lake of Nicaragua, and plentiful on the neighbouring rivers and lagoons.

Although we met with *Ardea egretta* commonly in Guatemala, the species is of a more solitary habit than most other Herons, rarely more than a pair being seen together.

The food consists of small mammals, frogs, snakes, lizards, small fish, insects, &c.

The nest, according to Mr. Ridgway, is a large flat structure of sticks, usually placed in tall trees in cypress-swamps, or overhanging the water, up to a height of one hundred and fifty feet. The eggs are two or three in number and of a light blue colour.

3. Ardea candidissima.

Ardea candidissima, Gmel. Syst. Nat. i. p. 633 [1]; Scl. & Salv. P. Z. S. 1867, p. 280 [2]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 169 [3]; Zeled. An. Mus. Nac. Costa Rica, i. p. 130 (1887) [4]; Herrera, La Nat. (2) i. pp. 185 [5], 327 [6]; Salv. Ibis, 1889, p. 376 [7]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 72 [9]; Nelson, N. Amer. Fauna, no. 14, p. 33 [10].

Herodias candidissima, Scl. P. Z. S. 1857, p. 206 [11].

Garzetta candidissima, Moore, P. Z. S. 1859, p. 64 [12]; Scl. P. Z. S. 1859, p. 369 [13]; 1864, p. 179 [14]; Scl. & Salv. Ibis, 1859, p. 226 [15]; P. Z. S. 1864, p. 371 [16]; Cass. Pr. Acad. Philad. 1860, p. 196 [17]; Lawr. Ann. Lyc. N. Y. vii. p. 301 [18]; ix. pp. 142 [19], 210 [20]; Mem. Bost. Soc. N. H. ii. p. 310 [21]; Bull. U. S. Nat. Mus. no. 4, p. 48 [22]; Salv. Ibis, 1865, p. 191 [23]; Dugès, La Nat. i. p. 142 [24]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 285 [25]; Nutting, Pr. U. S. Nat. Mus. vi. pp. 379 [26], 396 [27]; Ridgw. Pr. U. S. Nat. Mus. viii. p. 581 [28].

Egretta candidissima, Salv. Ibis, 1864, p. 374 [29]; P. Z. S. 1870, p. 218 [30].

Leucophoyx candidissima, Sharpe, Cat. Birds Brit. Mus. xxvi. p. 124 [31]; Oates, Cat. Eggs Brit. Mus. ii. p. 121 [32].

Ptil. æstiv. Pure alba, plumis dorsalibus elongatis recurvatis; pileo nuchaque plumis filamentosis ornatis; præpectore quoque eodem modo ornato: rostro nigro, basaliter flavicante; loris et palpebris nudis flavis: pedibus nigris, digitorum plantis flavis vel aurantiacis; iride flava. Long. tota circa 21·0, alæ 10·5, caudæ 3·4, culm. 3·35, tarsi 3·85. (Descr. maris adulti ex Punta Rassa, Florida. Mus. nostr.)

♀ *ad.* mari similis, sed plumis ornamentalibus brevioribus distinguenda. Long. tota 20·5, alæ 9·9. (Descr. feminæ adultæ ex Punta Rassa. Mus. nostr.)

Ptil. hiem. plitosi æstivæ similis, sed plumis ornamentalibus nullis : rostro basin versus flavicante. (Descr. fem. adultæ ex Punta Rassa. Mus. nostr.)

Juv. adultis similis, pure alba, vix cristata, plumis ornamentalibus nullis.

Hab. Temperate and Tropical North America, from Long Island and Oregon southwards, casually to Nova Scotia and Southern British Columbia [9].—Mexico, Tampico (*Richardson* [31]), Tres Marias Is. (*Grayson* [21 25], *Nelson* [10]), Presidio de Mazatlan (*Forrer* [31]), Mazatlan (*Bischoff* [21], *Grayson* [21]), Rio de Coahuayana, Colima (*Xantus* [21]), Guanajuato (*Dugès* [24]), Valley of Mexico (*Herrera* [5 6]), city of Mexico (*White* [14]), Laguna del Rosario, Tlaxcala (*Ferrari-Perez* [3]), Jalapa (*de Oca* [13], *Sallé* [11]), Santa Efigenia, Tehuantepec, Oaxaca (*Sumichrast* [22]), Progreso, Yucatan (*Schott* [20]), Merida (*Gaumer* [31]), Cozumel I. (*Bean* [28], *Gaumer* [7 31]); British Honduras, Turneff Lagoon, Man-o'-War Cay (*O. S.* [29]), Belize (*Blancaneaux* [31]); Guatemala, Chiapam (*O. S.* [23]), Lake of Dueñas, Coban, Yzabal (*O. S.* [15 31]); Honduras, River Chilomo (*Leyland* [12]); Nicaragua, San Juan del Sur, Pacific coast [26], Ometépe I., Lake of Nicaragua [27] (*Nutting*), Blewfields (*Wickham* [2]), Rio Frio, Rio Escondido (*Richmond* [8]); Costa Rica (*Capt. Dow* [19]), Liberia (*Zeledon* [4]); Panama, Castillo (*E. Arcé* [30]), Lion Hill Station (*M'Leannan* [16 18 31]).—South America generally [31].

The Snowy Egret takes the place of the European *Ardea garzetta* in the New World. In breeding-plumage it has a very large crest of decomposed feathers, but no elongated ornamental plumes on the neck; on this account Dr. Bowdler Sharpe placed it in a separate genus, *Leucophoyx*.

Considerable variation in size is found even in birds from the same locality and procured at the same time of year.

A. candidissima breeds throughout the greater part of its range in the United States and also in favourable localities in Central America, as Salvin found nests with both eggs and young on Man-o'-War Cay, off the coast of British Honduras [29]. Dr. Gundlach says that large communities breed in Cuba; and from Natterer's localities and dates it should nest in Brazil, as it certainly does in Chili [32]. In winter the species migrates southward, and is seen abundantly in small flocks in many of the Central-American States. It frequents both coasts of Guatemala, and is very common on the Atlantic; we procured specimens, too, at Chiapam, on the Pacific. Mr. Nutting found large numbers on both coasts of Nicaragua, and it has also been recorded from some of the rivers of that country. Gregarious during the nesting-season, this bird breeds in colonies like other Egrets. Formerly there were enormous numbers of nesting birds, but the constant shooting of these and other Herons during the breeding-time has entirely destroyed many of the colonies in North America.

The late Dr. Brewer gives an interesting account of their habits from his own experience and that of his correspondents. One of the latter, Mr. N. B. Moore,

states that a method of procuring food is by "raking" or "scraping" the ground in the swamps, and then pouncing on any prey which may thus have been disturbed. He also saw this Egret in companies, hovering above a shoal of small fishes, and endeavouring to catch them after the manner of Terns. Two or three nests composed of sticks are generally placed in the same low tree overhanging the water. The eggs are two or three in number, of the usual blue colour.

4. **Ardea tricolor.**

Héron bleuâtre à ventre blanc de Cayenne, Daubent. Pl. Enl. viii. t. 350[1].

Ardea tricolor, P. L. S. Müll. Syst. Nat., Suppl. p. 111[2].

Hydranassa tricolor, Ridgw. in Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 40[3]; Sharpe, Cat. Birds Brit. Mus. xxvi. pp. 126, 273[4]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 11[5].

Ardea ludoviciana (nec Gm.), Wilson, Amer. Orn. viii. p. 13, t. 64. fig. 1[6]; Salv. Ibis, 1889, p. 376[7].

Demiegretta ludoviciana, Scl. P. Z. S. 1860, p. 253[8]; Scl. & Salv. P. Z. S. 1864, p. 371[9]; Salv. Ibis, 1865, p. 192[10]; 1866, p. 196[11]; Lawr. Ann. Lyc. N. Y. ix. pp. 142[12], 210[13].

Hydranassa tricolor ludoviciana, Ridgw. in Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 39[14]; Nutting, Pr. U. S. Nat. Mus. vi. p. 379[15].

Ardea cayanensis, Licht. Preis-Verz. Mex. Vög. p. 3[16]; Cab. J. f. Orn. 1863, p. 59[17].

Herodias leucogaster (nec Gm.), Gray, List Grallæ Brit. Mus. p. 79[18].

Demiegretta leucogastra, Sumichr. La Nat. v. p. 233[19].

Egretta ruficollis, Gosse, Birds Jamaica, p. 338, pl. 93[20].

Ardea tricolor ruficollis, Ridgw. Pr. U. S. Nat. Mus. viii. p. 355[21]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 169[22]; Zeledon, An. Mus. Nac. Costa Rica, i. p. 130 (1887)[23]; Stone, Pr. Acad. Philad. 1890, p. 203[24]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527[25]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 72[26].

Hydranassa ruficollis, Sharpe, Cat. Birds Brit. Mus. xxvi. pp. 127, 274[27]; Oates, Cat. Eggs Brit. Mus. ii. p. 122[28].

Ardea leucoprymna, Licht. Nomencl. Av. Mus. Berol. p. 89[29].

Demiegretta leucoprymna, Lawr. Mem. Bost. Soc. N. H. ii. p. 310[30].

Demiegretta leucogastra, var. *leucoprymna,* Lawr. Bull. U. S. Nat. Mus. no. 4, p. 48[31].

Supra saturate schistacea, paullulum lilaceo adumbrata, plumis elongatis dorsalibus lilacino-brunneis, apicem versus albicantibus; alis caudaque schistaceis; pileo saturate schistaceo, nuchæ collique plumis elongatis violascentibus; crista mediana plumis albis, interdum absentibus, ornata; facie laterali et colli lateribus saturate schistaceis, his elongatis et violascentibus; mento et gula superiore pure albis, gutture et præpectore medio vinaceo-castaneis, hujus plumis quoque basaliter plus minusve albis; corpore reliquo subtus cum subalaribus et axillaribus pure albis; remigibus intus canis: rostro cyaneo, apicem versus nigro, basin versus lilacino; area nuda lorali lilacina; pedibus schistaceis; iride rubra. Long. tota circa 18·5, alæ 10·8, caudæ 3·5, culm. 3·9, tarsi 4·1. (Descr. maris adulti ex Tampico. Mus. nostr.)

♀ mari similis. Long. tota circa 20·0, alæ 9·7.

Ptil. hiem. ptilosi æstivæ similis, sed plumis ornamentalibus absentibus; crista nuchali nulla.

Juv. adultis similis, sed pallidior, notæi plumis ferrugineo vel castaneo-rufo lavatis et marginatis; dorso postico, uropygio et supracaudalibus albis; pileo, facie laterali et collo castaneo-rufis, hoc lateraliter plumis schistaceo-dimidiatis ornato; pectoris quoque lateribus dimidiatim schistaceis et albis; gula alba; gutture maculis rufis et nigris variegato; corpore reliquo subtus pure albo.

Hab. North America, Gulf States, casually northward to New Jersey and Indiana [26].—Mexico (*Deppe & Schiede* [16 17]), Presidio de Mazatlan (*Forrer* [27]), Mazatlan (*Grayson* [30], *Bischoff* [30]), Manzanilla Bay (*Xantus* [30]), Tampico (*Sumichrast* [19], *Richardson* [27]), Vera Cruz (*Sallé* [8]), Playa Vicente (*Trujillo* [27]), San Baltazar (*Ferrari-Perez* [22]), Tehuantepec city (*Sumichrast* [19]), Yucatan, Progreso (*Schott* [13], *Stone & Baker* [24]), Cozumel I. (*Gaumer* [4 7]); British Honduras, Turneff Lagoon, Belize coast (*O. S.* [27]); Guatemala Pacific coast (*O. S. & F. D. G.* [11]), Chiapam [10], San José [27], Huamachal [27] (*O. S.*); Nicaragua, Momotombo (*Richardson* [27]), Rio Escondido (*Richmond* [25]), San Juan del Sur, Pacific coast (*Nutting* [15]); Costa Rica (*v. Frantzius* [12]), Punta Arenas (*Zeledon* [23]); Panama [9], Lion Hill Station [27] (*M'Leannan*), Rio Sabana (*Festa* [5]).—Venezuela [4]; Guiana [4]; West-Indian Is. [27].

This Heron is an inhabitant of the Gulf States of North America, occasional stragglers reaching north to New Jersey and Indiana. In Florida it is resident and nests abundantly, and that it breeds in Cuba and Jamaica is proved by the eggs in the Crowley collection. Specimens of *A. tricolor* from Guiana have been regarded by Mr. Ridgway as distinct from the North- and Central-American race, *A. ruficollis*, but we agree with Dr. Bowdler Sharpe that the two cannot be separated.

In Western Mexico, according to Grayson, *A. tricolor* is a resident, and very common at Mazatlan, as it is indeed throughout the whole of Central America to Panama, and we ourselves saw many among the lagoons on the Pacific coast of Guatemala, but never far inland. Whether it breeds south of Mexico is uncertain, and it is probably only a winter visitant. Mr. Nutting found the species abundant on the Pacific coast of Nicaragua, and Messrs. Stone and Baker record it as very common in the mangrove-swamps at Progreso in Yucatan.

A. tricolor is apparently less hardy than other small Herons, as Audubon relates that on one occasion, in Florida, a frost in January caused this bird to disappear until the weather became warmer, whilst the other Herons all remained. He also says that it is the most delicate in form, beautiful in plumage, and graceful in its movements of any member of the family. The food consists of small fish, lizards, snails, and insects, at seizing which it is very expert.

The nest is a flat structure made of small dry sticks, with scarcely any lining, and placed on low trees and bushes. The birds breed in companies, and many hundreds of nests have been found together. The eggs are three (occasionally four, or even five) in number.

5. Ardea cærulea.

The Blew Heron, Catesby, Nat. Hist. Carol. i. t. 76 [1].

Ardea cærulea, Linn. Syst. Nat. i. p. 238 [2]; Scl. & Salv. P. Z. S. 1867, p. 280 [3]; v. Frantzius, J. f. Orn. 1869, p. 376 [4]; Salv. P. Z. S. 1870, p. 218 [5]; Cat. Strickl. Coll. p. 517 [6]; P. Z. S. 1883, p. 427 [7]; Ibis, 1889, p. 376 [8]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 170 [9]; Zeledon,

An. Mus. Nac. Costa Rica, i. p. 130 (1887) [10]; Stone, Pr. Acad. Philad. 1890, p. 203 [11]; Cherrie, Auk, 1892, p. 329 [12]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527 [13]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 73 [14].

Florida cærulea, Moore, P. Z. S. 1859, p. 63 [15]; Scl. & Salv. Ibis, 1859, p. 226 [16]; P. Z. S. 1864, p. 371 [17]; Scl. P. Z. S. 1860, p. 253 [18]; Lawr. Ann. Lyc. N. Y. vii. p. 334 [19]; ix. pp. 142 [20], 210 [21]; Mem. Bost. Soc. N. H. ii. p. 310 [22]; Bull. U. S. Nat. Mus. no. 4, p. 49 [23]; Sumichr. La Nat. v. p. 233 [24]; Nutting, Pr. U. S. Nat. Mus. v. p. 406 [25]; vi. p. 379 [26]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 100 [27]; Oates, Cat. Eggs Brit. Mus. ii. p. 117 [28].

Ardea cærulescens, Licht. Preis-Verz. Mex. Vög. p. 3 [29]; Cab. J. f. Orn. 1863, p. 59 [30].

Demiegretta pealei (?), Taylor, Ibis, 1860, p. 313 [31].

Ptil. æstiv. Supra schistacea, plumis dorsalibus elongatis lanceolatis quoque schistaceis; remigibus et rectricibus schistaceis; pileo et collo undique saturate purpureo-rubescentibus, pilei cristati plumis paullo saturatioribus; præpectore plumis schistaceis elongatis ornato; corpore reliquo subtus saturate schistaceo: rostro ad basin ultramarino, apicem versus nigro; loris et palpebris nudis ultramarinis; pedibus nigris; iride pallide flava. Long. tota circa 22·0, alæ 11·0, caudæ 3·8, culm. 2·95, tarsi 3·8. (Descr. maris adulti ex Tarpon Springs, Florida. Mus. nostr.)

♀ mari similis, sed plumis ornamentalibus brevioribus. Long. tota circa 20·5, alæ 10·1. (Descr. feminæ adultæ ex Tarpon Springs. Mus. nostr.)

Forma altera avis adultæ rarior pure alba.

Juv. Pure alba, pileo distincte cyanescenti-griseo lavatis, collo et dorso griseo paullulum adumbratis; primariis apicem versus griseo terminatis vel marginatis: rostro pallide lilaceo, apicem versus nigricante; pedibus pallide viridibus; iride flava.

Hab. North America, Eastern United States, from New Jersey, Illinois, and Kansas southward, casually north on the Atlantic coast to Massachusetts and Maine [14].—Mexico (*Deppe & Schiede* [29 30]), Mazatlan (*Grayson* [22], *Forrer* [27]), Tampico (*Richardson* [27]), Acapulco (*Markham* [7 27]), Laguna de Epatlan, Laguna del Rosario, Plan del Rio, Jalapa (*Ferrari-Perez* [9]), La Antigua, Vega del Cazadero, Vera Cruz (*Trujillo* [27]), Vera Cruz (*Sallé* [18]), Santa Efigenia, Tehuantepec [23], Tonala, Chiapas [27] (*Sumichrast*), Teapa (*Mrs. H. H. Smith* [27]), Shkolak, Yucatan (*Stone & Baker* [11]), Merida (*Schott* [21]), Cozumel I. (*Gaumer* [8 27]); British Honduras, Belize (*Leyland* [15], *Blancaneaux* [27]); Guatemala (*Constancia* [6]), Coban (*Skinner* [16], *O. S.* [27]), Rio Nagualate near El Idolo, Dueñas, Chiapam (*O. S.* [27]); Honduras (*Dyson* [27]), Fonseca Bay (*Taylor* [31]), Omoa (*Leyland* [15]); Nicaragua, Blewfields (*Wickham* [3]), Rio Escondido (*Richmond* [13]), San Juan del Sur, Pacific coast (*Nutting* [26]); Costa Rica (*v. Frantzius* [4 20]), San José (*Cherrie* [12]), Pejé (*Carmiol* [27]), Punta Arenas (*Capt. Dow* [27], *Zeledon* [10]), Bebedero, Pozo Azul, Miravalles (*Underwood*), La Palma, Gulf of Nicoya (*Nutting* [25]); Panama, Castillo (*E. Arcé* [5]), Lion Hill Station (*M'Leannan* [17 19 27]).—South America, Colombia, Guiana, Ecuador, Brazil [27]; West Indies [27].

The white plumage of the young of this bird is very remarkable. Mr. Ridgway says there is also a white phase of the adult; but this must be extremely rare, as in the large series in our collection we have none that confirm his statement. Young birds in their white plumage are always recognizable, on account of the blackish-blue shading at the end of the quills. Mr. Ridgway, in the 'Water-Birds of North America'

(i. p. 45), writes as follows :—" That the young of this species is not always white, and the adult invariably plumbeous, as has generally been supposed, is conclusively proven by the series we have been enabled to examine ; the true state of the case being that the white and blue plumages, usually supposed to represent the young and adult stages, are in reality 'dichromatic' phases. The case, although parallel in its nature to that of *Dichromanassa rufa*, differs in the circumstance that the white phase is seldom perfectly developed, while intermediate specimens are very much more numerous." We have also before us many parti-coloured examples, in blue plumage, with an irregular admixture of white feathers.

The Little Blue Heron is a summer visitor to the Gulf States of North America, breeding along the Atlantic States as far north as New Jersey, and being occasionally found in Massachusetts, sometimes wandering further inland. It breeds in numbers in Florida, and is resident in that State, though many individuals migrate. Although recorded from both the Atlantic and Pacific coasts of Mexico, as well as from inland waters, there is no record of its nesting in that country or in any other part of Central America, and it appears to be mostly a winter visitor. Richardson procured specimens in June at Tampico, but all other recorded occurrences have taken place between September and March, when it is often found abundantly. In Jamaica and Cuba it is resident, breeding in more or less abundance.

This small Heron is slow and deliberate in its movements, but very active in catching its prey, which consists of crabs, small fishes, tadpoles, lizards, worms, and insects.

The nest is a flat structure of sticks, with a little moss added ; it is built on the tops of cactus-bushes or in low shrubs ; but, according to Dr. Brewer, in its more northern breeding-haunts taller trees are selected. The eggs are three or four in number, of a somewhat deeper greenish-blue than in most Herons.

6. **Ardea rufa.**

L'Aigrette rousse de la Louisiane, Daubent. Pl. Enl. viii. t. 902 [1].

Ardea rufa, Bodd. Tabl. Pl. Enl. p. 54 [2] ; Salv. Ibis, 1889, p. 376 [3].

Demiegretta rufa, Salv. Ibis, 1866, p. 196 [4] ; Lawr. Ann. Lyc. N. Y. ix. p. 210 [5] ; Mem. Bost. Soc. N. H. ii. p. 310 [6] ; Bull. U. S. Nat. Mus. no. 4, p. 49 [7] ; Sumichr. La Nat. v. p. 233 [8].

Dichromanassa rufa, Sharpe, Cat. Birds Brit. Mus. xxvi. pp. 106 [9], 271 [10] ; Oates, Cat. Eggs Brit. Mus. ii. p. 118 [11].

Ardea pealei, Bp. Ann. Lyc. N. Y. ii. p. 154 [12] ; Salv. Ibis, 1889, p. 376 [13].

Demiegretta pealei, Salvin, Ibis, 1866, p. 196 [14] ; Sumichr. La Nat. v. p. 233 [15] ; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 49 [16].

Ardea rufescens, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 72 [17].

Supra schistacea, plumis ornamentalibus elongatis margaritaceo-cinereis, apicem versus pallidioribus, brunnescentibus ; remigibus et rectricibus schistaceis ; pileo et collo undique vinaceo-cinnamomeis, vix lilaceo lavatis, pilei et præpectoris plumis elongatis, vix pallidioribus ; corpore reliquo subtus pallidiore schistaceo ;

faciei area lorali et oculari nuda et rostro pallide carneis, hoc versus apicem nigro ; pedibus ultramarinis ; iride flavicante vel albida. Long. tota 27·5, alæ 13·5, caudæ 4·4, culm. 4·0, tarsi 5·8. (Descr. maris adulti ex Punta Rassa, Florida. Mus. nostr.)

♀ mari similis, sed plumis ornamentalibus brevioribus. Long. tota 25·5, alæ 11·8. (Descr. feminæ adultæ ex Punta Rassa. Mus. nostr.)

Forma altera avis adulti pure alba, plumis ornamentalibus eodem modo decorata.

Juv. adultis similis, sed pallidior, notæi plumis rufescente marginatis ; facie laterali et corpore subtus ferrugineo lavatis ; plumis ornamentalibus nullis.

Hab. North America, Gulf States north to Southern Illinois, Lower California [17].—Mexico, rivers and lakes of both coasts [8 15], San Mateo [7], Tehuantepec, Ventosa [15 16] (*Sumichrast*), Mazatlan (*Grayson* [6]), Progreso, Yucatan (*Schott* [5]), Cozumel I. (*Gaumer* [3 9 13]) ; Guatemala, Chiapam (*O. S.* [4 14]), Istan (*O. S.* [9]).—West Indies, Cuba, Jamaica [17].

This beautiful Heron, remarkable for its two distinct phases of rufous and white plumage, has, on this account, been separated as two species, the one rufous (*Ardea rufa*) and the other pure white (*A. pealei*). There can be no doubt, however, that the latter is only a white phase of the former, as they both assume similar ornamental plumes in the breeding-season.

Audubon considered that the white birds were the young of the rufous form, but, as Dr. Bowdler Sharpe [9] has pointed out, this cannot be the case, as our series from Texas shows them both in perfect breeding-plumage, with all the ornamental feathers fully developed. It has been further stated by Professor Ridgway that young birds, both white and rufous, have been found in the same nest, when the parent birds have been both rufous, or both white, or one rufous and the other white : so that neither age, sex, nor season has anything to do with the difference in colour between the two phases of plumage, which, at first sight, seems to indicate the existence of two distinct species. The same author states that sometimes reddish specimens with an admixture of white are found. We ourselves procured such an example at Chiapam in Guatemala, and there are others in the British Museum.

This species inhabits the Gulf States of North America during the summer, ranging as far north as Southern Illinois. It is also found in Lower California, and on both coasts of Mexico, being resident at Mazatlan, where, however, according to Grayson, it is not very abundant. In Guatemala, where the bird is probably only a winter visitant, we met with it on the muddy flats surrounding the salt-pools at Chiapam, the reddish form decidedly predominating in point of numbers.

Mr. Underwood does not include it in the list he sent us of the birds of Costa Rica.

In habits this Heron resembles others of its race, but seems to be more exclusively a salt-water loving species, frequenting principally the shallow flats near the sea. The food consists of small fishes and frogs, insects, &c., but, according to Mr. N. B. Moore's

notes in the 'Water-Birds of North America,' "no other Heron is so awkward, impetuous, and clumsy a fisher."

The nest, made of sticks, is built on the mangrove-trees, close to the water, and not many are found together. The eggs are three or four in number.

7. Ardea virescens.

The Small Bittern, Catesby, Nat. Hist. Carol. i. t. 80[1].

Ardea virescens, Linn. Syst. Nat. i. p. 238[2]; Licht. Preis-Verz. Mex. Vög. p. 3[3]; Cab. J. f. Orn. 1863, p. 59[4]; Scl. & Salv. P. Z. S. 1867, p. 280[5]; v. Frantz. J. f. Orn. 1869, p. 376[6]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 170[7]; Zeled. An. Mus. Nac. Costa Rica, 1887, p. 130[8]; Cherrie, Auk, 1890, p. 332[9], 1892, p. 329[10]; Stone, Pr. Acad. Philad. 1890, p. 203[11]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527[12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 73[13].

Butorides virescens, Scl. P. Z. S. 1856, p. 310[14]; 1859, p. 369[15]; Moore, P. Z. S. 1859, p. 63[16]; Scl. & Salv. Ibis, 1859, pp. 63[17], 227[18]; 1860, p. 45[19]; Lawr. Ann. Lyc. N. Y. vii. p. 301[20]; ix. p. 142[21]; Mem. Bost. Soc. N. H. ii. p. 310[22]; Bull. U. S. Nat. Mus. no. 4, p. 49[23]; Salv. Ibis, 1865, p. 191[24]; P. Z. S. 1870, p. 218[25]; Cat. Strickl. Coll. p. 518[26]; P. Z. S. 1883, p. 428[27]; Ibis, 1889, p. 376[28]; Dugès, La Nat. i. p. 142[29]; Sumichr. La Nat. v. p. 233[30]; Ridgw. Pr. U. S. Nat. Mus. v. p. 502[31]; Boucard, P. Z. S. 1883, p. 458[32]; Nutting, Pr. U. S. Nat. Mus. v. p. 406[33]; vi. pp. 379[34], 396[35]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 186[36]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 11[37]; Bangs, Auk, 1901, p. 25[38]; Oates, Cat. Eggs Brit. Mus. ii. p. 127[39].

Ardea virescens frazari, Brewster, Auk, v. p. 83[40]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 73[41].

Ardea bahamensis, Brewster, Auk, v. p. 83[42].

Butorides saturatus, Ridgw. Pr. U. S. Nat. Mus. x. p. 577[43]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 188[44].

Butorides frazari, Sharpe, Cat. Birds Brit. Mus. xxvi. p. 188[45].

Butorides bahamensis, Sharpe, Cat. Birds Brit. Mus. xxvi. 188[46].

Ptil. æstiv. Viridis, plumis dorsalibus elongatis schistascentibus; dorso postico et uropygio cineraceis, vix viridi lavatis; supracaudalibus autem caudaque viridibus; alis viridibus, tectricibus alarum ochraceo marginatis, his majoribus albido limbatis; remigibus schistaceis, extus viridibus, plerisque albo ad apicem leviter marginatis; pileo cristato, saturatiore, nigricante, plumis viridi et interdum purpureo nitentibus; facie laterali cum collo postico et colli præpectorisque lateribus vinaceo-castaneis; fascia angusta suboculari viridi, altera ad basin mandibulæ fulvescenti-alba; gutture toto et præpectore medialiter albis, illo maculis triquetris nigricantibus, hoc striga mediana fuscescenti-brunnea ornatis; corpore reliquo subtus schistaceo, brunneo lavato; subcaudalibus albidis ad apicem maculis sagittiformibus ornatis; margine alari albo: rostro virescenti-nigro, mandibula flava; pedibus virescenti-flavis; iride et faciei area nuda læte flavis. Long. tota circa 13·6, alæ 7·8, caudæ 2·6, culm. 2·35, tarsi 2·1. (Descr. maris adulti ex Chimalapa, Tehuantepec. Mus. nostr.)

♀ *ad.* vix a mari adulto distinguenda, sed plumis ornamentalibus viridioribus nec conspicue schistaceis. Long. tota circa 13·5, alæ 7·5. (Descr. feminæ adultæ ex Coban, Guatemala. Mus. nostr.)

Ptil. hiem. plumis ornamentalibus viridibus, faciei et colli lateribus castaneis, haud lilaceo vel purpureo adumbratis distinguenda.

Juv. Supra sordide schistacea, pileo nigricante vix viridi nitente; tectricibus alarum maculis apicalibus triquetris albis vel ochraceis ornatis; tectricibus majoribus et secundariis ochraceo vel albo marginatis;

primariis et tectricibus primariorum albo terminaliter limbatis ; faciei et colli lateribus brunnescenti-rufis ; corpore subtus albo, gutture et præpectore fusco longitudinaliter striatis ; pectore et hypochondriis sordide schistaceo striatis. (Descr. av. juv. ex Riverside, California. Mus. nostr.)

Hab. TEMPERATE NORTH AMERICA, from Ontario and Oregon southward (*A. virescens*) [13], Lower California (*A. frazari*) [40 41]. — MEXICO (*Deppe & Schiede* [3 4]), Tampico, Chimalapa (*Richardson* [36]), Mazatlan (*Grayson* [22]), Presidio de Mazatlan (*Forrer* [36]), Guanajuato (*Dugès* [29]), Colima (*Xantus* [22], *Lloyd* [36]), Manzanilla Bay (*Xantus* [22]), Acapulco (*Markham* [27 36], *Mrs. H. H. Smith* [36]), Acatlan, State of Puebla, Laguna del Rosario, State of Tlaxcala, Plan del Rio, Jalapa, State of Vera Cruz (*Ferrari-Perez* [7]), Cordova (*Sallé* [14], *Ferrari-Perez* [36]), Jalapa (*de Oca* [15]), Laguna Verde, Sochiapa, Vera Cruz (*Trujillo* [36]), Barrio, Santa Efigenia, Tehuantepec city (*Sumichrast* [23]), North Yucatan [32], Tizimin [36], Cozumel I. [28 36] (*Gaumer*), Progreso (*Stone & Baker* [11]); BRITISH HONDURAS, Belize (*Leyland* [16]), Cayo, western district (*Blancaneaux* [36]); GUATEMALA (*Constancia* [26], *O. S.* [18]), Dueñas, Chiapam (*O. S.* [19 24 36]), Atitlan (*Richardson* [36]); HONDURAS, Omoa (*Leyland* [16]), Ruatan I. (*Gaumer* [36]), Swan I. (*Townsend* [43]); NICARAGUA, Momotombo, San Carlos (*Richardson* [36]), Ometépe, Lake of Nicaragua, San Juan del Sur (*Nutting* [34 35]), Rio Escondido (*Richmond* [12]), Blewfields (*Wickham* [5]); COSTA RICA (*Carmiol* [21], *v. Frantzius* [21]), San José (*Zeledon* [8], *Nutting* [31], *Cherrie* [10], *v. Frantzius* [6]), La Palma (*Nutting* [33]), Rio Tirribi, Salitral, near San Antonio (*v. Frantzius* [6]), Liberia, Desamparados, San Joaquin (*Zeledon* [8]), Talamanca, Bahia de Salinas, Alujuela, Punta Arenas, San Lucas, Trojas, Estrella, Azahar, Jimenez (*Underwood*); PANAMA (*M'Leannan* [20]), Chitra, Calobre (*E. Arcé* [25]), Rio Coconati (*Festa* [37]), San Miguel in the Pearl Is. (*Brown* [38]).—COLOMBIA [36]; VENEZUELA [36]; TRINIDAD [36]; GREATER AND LESSER ANTILLES [36].

Of the present species and its many allies, *A. frazari*, *A. saturata*, *A. bahamensis*, &c., it is difficult to write definitely, as we have not been able to examine a sufficiently large series of the insular forms, which have been separated as distinct by the American ornithologists. Dr. Bowdler Sharpe, in the 'Catalogue of Birds,' recorded his opinion that the differential characters assigned to some of these species or races are due to the intensity of colouring during the breeding-season, and on the whole we are inclined to agree with him.

The Green Heron is found on both the Atlantic and Pacific sides of North America, but is apparently absent in the central regions of the United States. It becomes less common in the northern portions of its range, but breeds in Canada in limited numbers, a few pairs remaining all the winter in the Southern States. Plentiful in all the States of Central America, where it mostly appears as a winter visitant or on migration, this species, according to Grayson, is resident in Western Mexico at all seasons, and also at San José in Costa Rica, as recorded by Mr. Cherrie. We found large numbers

on most of the rivers of the coast of Guatemala among the mangrove-swamps, and secured eggs near Yzabal. Mr. Richmond and Mr. Nutting both noticed the Green Heron abundantly in Nicaragua, where, however, the first-mentioned observer considered the bird to be a winter visitor only; he first noticed specimens early in October. It breeds in some of the Antillean islands and in Trinidad.

A. virescens is not so gregarious as some of the other North-American members of the genus, and the bird never breeds in companies with its own kind, but nests along with the Night-Herons and other species of *Ardea*. Dr. Brewer says that two nests of the Green Heron are seldom found in proximity to each other.

In habits this bird does not differ from other small Herons. It feeds at night as well as by day, and is very expert in catching the fish which form its principal prey, though likewise devouring frogs, lizards, and insects which frequent the marshes.

The nest is a somewhat large structure for the size of the bird, and is built in trees, being a slight framework of sticks lined with smaller twigs. The eggs are two or three in number, rarely four.

8. **Ardea agami.**

Le Héron Agami, Buff. Hist. Nat. Ois. vii. p. 382 [1].

Ardea agami, Gm. Syst. Nat. i. p. 629 [2].

Agamia agami, Sharpe, Cat. Birds Brit. Mus. xxvi. p. 135 [3]; Bangs, Auk, 1901, p. 25 [4].

Agamia picta, Scl. P. Z. S. 1862, p. 369 [5]; Sumichr. La Nat. v. p. 233 [6]; Zeledon, An. Mus. Nac. Costa Rica, i. p. 131 (1887) [7].

Supra saturate viridis, scapularibus extus castaneis, plumis dorsalibus ornamentalibus pulchre cinereis, longioribus apicem versus margaritaceis; remigibus et rectricibus schistaceis, extus viridi lavatis; pileo pulchre schistaceo, cristam nuchalem versus margaritaceo-cinereo; facie laterali et collo laterali et postico nigris, hoc clare cinereo lineolatim striatis; gula alba, medialiter vinaceo-castaneo striata; colli lateribus vinaceo-castaneis, plumis filamentosis clare cinereis ornatis; gutture medio vinaceo-castaneo, utrinque albo longitudinaliter marginato; præpectore pulchre margaritaceo-cinereo, medialiter nigricanti-plumbeo; corpore reliquo subtus vinaceo-castaneo; maxilla brunnescenti-nigra, mandibula et regione nuda faciali flavis; iride flava. Long. tota circa 32·0, alæ 10·4, caudæ 4·0, culm. 5·8, tarsi 3·75. (Descr. maris adulti ex R. Takuta, Brit. Guiana. Mus. nostr.)

Juv. Brunnea, collo et tectricibus alarum pallidioribus; pileo nigricante; remigibus et rectricibus schistaceis, paullo viridi lavatis; facie laterali et colli lateribus brunneis; gula alba, medialiter castaneo lineata; gutture medialiter castaneo, utrinque ochraceo longitudinaliter marginato, vix nigro variegato; corpore reliquo subtus ochrascente vel albido, plumis utrinque nigro striolatim marginatis; pedibus olivaceo-viridibus. (Descr. av. juv. ex Veragua. Mus. nostr.)

Hab. Mexico [5], Rio Coatzacoalcos, Tuxpango near Orizaba (*Sumichrast* [6]); British Honduras (*Blancaneaux* [3]); Guatemala, Peten (*Sarg* [3]); Costa Rica, Pozo Azul de Pirris (*Zeledon* [7]); Panama, Veraguas (*E. Arcé* [3]), San Miguel in the Pearl Is. (*Brown* [4]).—Guiana [3]; Brazil [3]; Amazonia [3].

A. agami, remarkable for its extraordinarily long bill and for the diversity of its plumage, is everywhere rare in Central America, though it has been recorded from

most of the States. We ourselves never met with the species in Guatemala, but we have one specimen in our collection sent by Mr. Sarg. In Nicaragua it has apparently not yet been noticed.

Nothing has been recorded of the habits of this Heron in Central America. In South America, where the species is widely distributed, it seems to be somewhat solitary, frequenting the banks of quiet rivers and woodland streams.

NYCTICORAX.

Nycticorax, Rafin. Analyse, p. 71 (1815); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 145 (1898).
Nyctiardea, Swainson, Classif. Birds, ii. p. 354 (1837); Ridgway, Bull. U. S. Geol. & Geogr Survey, iv. p. 224 (1878).

The true Night-Herons, according to Dr. Sharpe, differ from the members of the genus *Ardea* and its several subgenera in having "the bare portion of the tibio-tarsus of less extent than the length of the inner toe, the feathering sometimes extending to the heel." The Agami Heron, which is somewhat an aberrant member of the genus *Ardea*, shares the above characters with *Nycticorax*, but its enormously long pointed bill allies it with *Ardea*, as the Night-Herons have a very moderately-sized bill, about equal in length to the tarsus, with no serrations in either mandible, the upper one having merely a notch before its tip. The present genus and the succeeding one (*Nyctanassa*), have much in common, but the tarsus is shorter in *Nycticorax*, and the ornamental plumes are long and narrow, white, and only two or three in number.

Mr. Ridgway gives the following distinctive characters for the present genus as compared with those of *Nyctanassa*:—"Size medium. Adult with several extremely elongated, linear, compact-webbed, occipital plumes. No scapular plumes. Jugular feathers broad, blended. Culmen about equal to tarsus, the latter slightly longer than middle toe. Lateral outlines of bill concave; genys nearly straight. Adult and young exceedingly different in plumage."

Eight species of true Night-Herons are known, and the genus *Nycticorax* is found throughout the temperate and tropical portions of both hemispheres.

✓ 1. Nycticorax griseus.

Ardea nycticorax, Linn. Syst. Nat. i. p. 235 [1].
Nycticorax nycticorax, Licht. Nomencl. Av. Mus. Berol. p. 90 [2]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 146 [3]; Oates, Cat. Eggs Brit. Mus. ii. p. 123 [4].
Ardea grisea, Linn. Syst. Nat. i. p. 239 [5].
Nyctiardea grisea, Sumichr. La Nat. v. p. 233 [6].
Ardea nævia, Bodd. Tabl. Pl. Enl. p. 56 [7].
Nyctiardea grisea, var. *nævia,* Allen, Bull. Mus. Comp. Zool. iii. p. 182 [8]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 49 [9].

Nyctiardea nævia, Lawr. Mem. Bost. Soc. N. H. ii. p. 311 [10].

Nycticorax griseus nævius, Nutting, Pr. U. S. Nat. Mus. v. p. 406 [11]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 55 [12].

Nycticorax nycticorax nævius, Zeledon, Pr. U. S. Nat. Mus. viii. p. 113 [13]; An. Mus. Nac. Costa Rica, i. p. 131 (1887) [14]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 170 [15]; Richm. op. cit. xvi. p. 528 [16]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 74 [17].

Ardea gardeni, Gm. Syst. Nat. i. p. 645 [18].

Nycticorax gardeni, Scl. P. Z. S. 1857, pp. 206 [19], 230 [20]; 1859, p. 369 [21]; Moore, P. Z. S. 1859, p. 63 [22]; Scl. & Salv. Ibis, 1859, p. 227 [23]; Taylor, Ibis, 1860, p. 313 [24]; Dugès, La Nat. i. p. 142 [25]; Salv. P. Z. S. 1883, p. 428 [26]; Herrera, La Nat. (2) i. pp. 185 [27], 327 [28].

Nycticorax europæus, Steph. in Shaw's Gen. Zool. xi. p. 609 [29].

Nycticorax americanus, Bp. Comp. List Birds Eur. & N. Amer. p. 48 [30]; v. Frantz. J. f. Orn. 1869, p. 376 [31].

Margaritaceo-cinereus; dorsi plumis et scapularibus elongatis nigris, saturate viridi nitentibus; alis caudaque pulchre cinereis; pileo cristato, viridescenti-nigro, nucha plumis duabus albis elongatis ornata; fronte basali et linea interrupta superciliari albis; facie laterali et corpore subtus toto albis, pulchre lilascenti-cinereo lavatis: rostro læte viridi, culmine et mandibulæ apice nigricantibus; loris et regione oculari nudis læte viridibus; pedibus flavicanti-viridibus; iride coccinea. Long. tota circa 19·0, alæ 12·25, caudæ 4·5, culm. 2·75, tarsi 3·1. (Descr. maris adulti ex Coban, Guatemala. Mus. nostr.)

♀ mari similis, sed plumis nuchalibus albis brevioribus. Long. tota circa 20·0, alæ 12·45. (Descr. feminæ adultæ ex Brownsville, Texas. Mus. nostr.)

Juv. Brunneus, notæi plumis medialiter albicanti-brunneo lineatis vel maculis triquetris albis terminatis; facie laterali et corpore subtus toto albidis, vix brunneo tinctis; plumis brunneo marginatis, quasi striolatis.

Hab. North America, from Southern Canada throughout the United States [17].—Mexico, Mazatlan (*Grayson* [10]), Presidio de Mazatlan (*Forrer* [3]), Rio de Coahuayana (*Xantus* [10]), Guanajuato, Guadalajara (*Dugès* [25]), Acapulco (*Markham* [3 26]), Valley of Mexico (*Herrera* [27 28], *Sumichrast* [6]), Tampico, Aguas Calientes, Colotlan, Jalisco (*Richardson* [3]), Chiautla, Puebla (*Ferrari-Perez* [15]), Jalapa (*De Oca* [21], *Sallé* [19], *Ferrari-Perez* [15]), Cateman * (*Boucard* [20]), Oaxaca [6], Orizaba, Tehuantepec (*Sumichrast* [6 9]); Guatemala (*Skinner* [23]), Choctum (*O. S.* [3]), Lake of Peten (*Leyland* [22]); Honduras, Omoa (*Leyland* [22]), Fonseca Bay (*Taylor* [24]); Nicaragua, Rio Frio (*Richmond* [16]); Costa Rica (*v. Frantzius* [31]), San José (*Zeledon* [13]), La Palma, Gulf of Nicoya (*Nutting* [11]), Liberia (*Zeledon* [14]).—Colombia [3]; Ecuador [3]; Trinidad [12]; Amazonia [3]; West Indies [3].—Temperate Europe and the greater part of Africa and Asia.

Although the American birds are slightly larger than those from the Old World, we see no valid reason for supposing that the Night-Herons of the two hemispheres are specifically different. American ornithologists recognize only one species of *Nycticorax* throughout the whole of the Neotropical Region, whereas Dr. Bowdler Sharpe believes that there are three well-characterized races, two of which are found in South America, from Peru to the Straits of Magellan and the Falkland Islands.

* Perhaps a misprint for Catemaco, Vera Cruz.

The Night-Heron nests in suitable localities throughout the United States and in certain parts of Canada, migrating southward on the approach of the cold weather, though passing the winter in some of the Southern States. It is a resident in Western Mexico, but not very plentiful there. As Mr. Nutting noticed the species in Costa Rica in April, it probably breeds in that country. *N. griseus* is a winter visitor only to the Bermudas, nesting plentifully in the West India Islands and also in Trinidad.

The food of this species consists mainly of small fish, but frogs, lizards, and also small mice form part of its prey. The nests are built by the birds in colonies, and are sometimes placed in trees at a great height, at other times close to the ground, and invariably in swampy situations. They consist of a cradle of sticks, firmly put together. The eggs are generally four, but as many as seven have been recorded; they are oval in shape and of a light greenish-blue colour.

NYCTANASSA.

Nyctherodius, Reichenb. Av. Syst. Nat. p. xvi (1852, nec Macgill.); Ridgw. Bull. U. S. Geol. & Geogr. Surv. iv. p. 225.

Nyctanassa, Stejn. Pr. U. S. Nat. Mus. x. p. 295, note (1887); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 130 (1898).

In comparison with *Ardea*, or even with *Nycticorax*, the bill of *Nyctanassa* is much more massive and heavy, but not so long, and has no serrations on the edges of the mandibles. The genus is, as might have been expected from its general appearance, allied to the Night-Herons (*Nycticorax*), and we take from Mr. Ridgway's work the following characters by which he distinguishes the genus *Nyctanassa*:—"Size medium. Adult with several elongated, linear, compact-webbed occipital plumes. Scapular plumes elongated, narrow, round-tipped, the webs somewhat decomposed. Jugular feathers broad, blended. Culmen much shorter than tarsus (a little longer than middle toe). Colour much variegated. Lateral outlines of the bill straight; genys very convex. Adult and young exceedingly different in plumage."

One species only is known, *N. violacea*, which breeds in Eastern North America, and visits Central and South America in winter.

1. Nyctanassa violacea.

The Crested Bittern, Catesby, Nat. Hist. Carol. i. t. 79 [1].

Ardea violacea, Linn. Syst. Nat. i. p. 238 [2].

Nycticorax violaceus, Boie, Isis, 1826, p. 979 [3]; Scl. P. Z. S. 1860, p. 253 [4]; Salv. Ibis, 1861, p. 357 [5]; 1865, p. 191 [6]; 1889, p. 376 [7]; v. Frantz. J. f. Orn. 1869, p. 376 [8]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 170 [9]; Zeledon, An. Mus. Nac. Costa Rica, p. 131 [10]; Townsend, Pr. U. S. Nat. Mus. xiii. p. 135 [11]; Cherrie, Auk, 1892, p. 329 [12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 74 [13]; Nelson, N. Amer. Fauna, no. 14, p. 33 [14].

Nyctherodius violaceus, Reichenb. Av. Syst. Nat. p. xvi [15]; Grayson, Pr. Bost. Soc. N. H. xiv.

pp. 285 [16], 301 [17]; Lawr. Mem. Bost. Soc. N. H. ii. p. 311 [18]; Sumichr. La Nat. v. p. 233 [19]; Salv. Cat. Strickl. Coll. p. 521 [20]; Nutting, Pr. U. S. Nat. Mus. vi. p. 379 [21].

Nyctanassa violacea, Stejn. Pr. U. S. Nat. Mus. x. p. 295 [22]; Sharpe, Cat. Birds Brit. Mus. xxvi. pp. 130 [23], 274 [24]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 12 [25]; Bangs, Auk, 1901, p. 25 [26]; Oates, Cat. Eggs Brit. Mus. ii. p. 122 [27].

Ardea nycticorax, Licht. Preis-Verz. Mex. Vög. p. 3 [28]; Cab. J. f. Orn. 1863, p. 59 (nec Linn.) [29].

Supra clare schistacea, notæi plumis longitudinaliter nigro striatis, medialiter nigris, marginibus schistaceis vel clare canis; tectricibus alarum nigricantibus, schistaceo marginatis; remigibus nigricantibus, primariis anguste, secundariis latius schistaceo marginatis; rectricibus nigricantibus, schistaceo limbatis; pileo summo albo; nuchæ plumis elongatis, nigris, duabus longioribus albis; pileo postico laterali cum regione parotica, genis, mento et gula superiore, cum collo postico, nigris; fascia lata subauriculari alba; corpore subtus reliquo pulchre schistaceo, abdomine imo et subcaudalibus albicantibus; linea transversa gulari indistincte alba; subalaribus et axillaribus schistaceis concoloribus: rostro nigro, mandibulæ basi viridescenti-flava; loris et area oculari nudis viridescenti-flavis; pedibus sordide flavescenti-viridibus; iride pallide aurantiaca. Long. tota circa 20·0, alæ 11·6, caudæ 4·25, culm. 3·0, tarsi 3·9. (Descr. maris adulti ex Nueces Co., Texas. Mus. nostr.)

♀ *ad.* mari similis. Long. tota circa 20·0, alæ 11·6. (Descr. feminæ adultæ ex Nueces Co. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed pileo albo rufescenti-brunneo lavato et plumis nuchalibus ornamentalibus absentibus distinguenda.

Juv. Cinerascenti-brunnea, notæi plumis medialiter albo lineatis, vel maculis triquetris albis d apice m notatis; tectricibus majoribus quoque albido marginatis; remigibus rectricibusque cinereis, primariis et secundariis intimis albo triquetrim terminatis; pileo nigricanti-brunneo, plumis anguste medialiter albo lineatis; regione parotica eodem modo notota; gutture albo; facie reliqua laterali et corpore subtus toto albidis, plumis brunneo marginatis, unde gastræum late striolatum; subcaudalibus albis; subalaribus cinereis, albo triquetrim maculatis. (Descr. av. juv. ex Chiapam, Guatemala. Mus. nostr.)

Hab. Tropical and Temperate North America, from the Carolinas, the lower Ohio Valley, and Lower California southward [13].—Revillagigedo Is., Socorro I. (*Grayson* [11 18]); Mexico (*Deppe & Schiede* [28 29]), Mazatlan (*Grayson* [18], *Bischoff* [18], *Forrer* [23]), Rio de Coahuayana (*Xantus* [18]), Tampico (*Richardson* [23], *Sumichrast* [19]), Oaxaca, Cosamaloapam, Tehuantepec (*Sumichrast* [19]), Tres Marias Is. (*Grayson* [16 18], *Nelson* [14]), Laguna del Rosario, Tlaxcala, Santa Ana, Vera Cruz (*Ferrari-Perez* [9]), Orizaba, Vera Cruz (*Sallé* [4]), La Antigua (*Trujillo* [23]), Cozumel I. (*Gaumer* [7 23]); Guatemala (*Constancia* [20]), Chiapam, Pacific coast (*O. S.* [6 23]); Honduras (*Dyson* [5]), Ruatan I. (*Gaumer* [7]); Nicaragua, San Juan del Sur, Pacific coast (*Nutting* [21]); Costa Rica (*E. Arcé* [23]), San José (*v. Frantzius* [8], *Cherrie* [12]), Las Trojas, Alajuela (*Zeledon* [10]); Panama (*Kellett & Wood* [23]), Rio Lara, Punta de Sabana (*Festa* [25]), San Miguel in the Pearl Is. (*Brown* [26]).—South America generally to Southern Brazil [23]; Greater and Lesser Antilles [23].

This species is easily recognizable by its somewhat thick bill, which is much stouter than that of any of the typical American Herons. It has the appearance of an ordinary *Nycticorax*, but is easily distinguished by its white or yellowish-buff crown and by the tuft of ornamental feathers on the nape instead of the long white plumes, two to four in number, which adorn the true Night-Herons during the nesting-season. The dorsal

plumes are also more developed, and the tarsus is longer than the middle toe and claw, whereas in *Nycticorax* these are about equal.

By American ornithologists this bird is called the "White- or Yellow-crowned" Night-Heron, the former being the most appropriate title, as the yellow or buff crown is characteristic of the species in winter or immature plumage.

In the United States *N. violacea* does not breed north of the Carolinas, though occasionally specimens are met with in higher latitudes. It is resident in some of the Central-American States, and is noticed as breeding in Western Mexico by Grayson, and again as a resident in Costa Rica by Cherrie. Grayson believed that a few pairs bred on Socorro Island and on the Tres Marias.

N. violacea appears to be, from all accounts, one of the most typical of the Night-Herons as regards its habits, being much more active during early dawn than in the daytime. The food consists mainly of crabs, but it also, like other Herons, devours fish, lizards, small snakes and rodents, insects, snails, &c.

This species breeds in colonies, and the nest is a loosely built structure of small sticks, and is often to be found at a low elevation on the boughs of the mangroves and in bushes, but is sometimes placed on trees at a considerable height. The eggs are three in number.

PILHERODIUS.

Pilherodius, Bp. Consp. Av. ii. p. 139 (1855); Ridgw. Bull. U. S. Geol. & Geogr. Surv. iv. p. 224 (1878); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 171 (1898).

The genus *Pilherodius* contains but a single species, which has usually been placed amongst the Night-Herons. It differs, however, from the typical members of the latter group, such as *Nycticorax*, in having the bill serrated near the tip, with only a slightly indicated subterminal notch. Other generic characters are given by Dr. Bowdler Sharpe in the 'Catalogue of Birds,' from which we extract the following:—"Bill moderately long, exceeding the length of the middle toe and claw; tarsus longer than the culmen, and reticulated in front with hexagonal scales; throat entirely feathered; nape with four ornamental white plumes depending over the back."

Mr. Ridgway's comparative characters are the following:—"Size medium, orbits and anterior portion of malar region naked. Occiput with two extremely elongated, linear, compact-webbed plumes. Jugular plumes broad, blended. No scapular plumes. Colour white, the crown and occiput black. Middle toe shorter than culmen; culmen shorter than occiput."

1. **Pilherodius pileatus.**

Le Héron blanc huppé de Cayenne, Daubent. Pl. Enl. viii. t. 907[1].

Ardea pileata, Bodd. Tabl. Pl. Enl. p. 54[2].

Pilherodius pileatus, Bp. Consp. Av. ii. p. 139[3]; Lawr. Ann. Lyc. N. Y. vii. p. 301[4]; Ridgw. Bull. U. S. Geol. & Geogr. Surv. iv. p. 224[5]; Sharpe, Cat. Birds Brit. Mus. xxvi. pp. 171[6], 277[7].

Pure albus, dorso alisque clare griseo lavatis; pileo cristato nigro, plumis nuchalibus albis ornamentalibus valde productis; fronte cinerea; facie laterali, collo undique, et corpore subtus toto lactescenti-albis; loris et regione oculari nudis et rostro pulchre cyaneis, hujus apice viridescente; pedibus plumbescenti-cinereis; iride viridescenti-cinerea. Long. tota circa 23·0, alæ 10·9, caudæ 3·75, culm. 3·4, tarsi 3·4. (Descr. maris adulti ex Rio de Janeiro. Mus. Brit.)

♀ mari similis, sed notæo albo haud griseo adumbrato; plumis nuchalibus brevioribus. Long. tota circa 22·0, alæ 10·2. (Descr. feminæ adultæ ex British Guiana. Mus. Brit.)

Hab. PANAMA (*M'Leannan* [4]).—SOUTH AMERICA, from Guiana to Amazonia and Brazil [6 7].

Though rare in collections, *P. pileatus* has a wide distribution in South America, and would appear to be by no means uncommon in Brazil and on the savanas of Guiana. According to Prince Maximilian of Neuwied, this Heron is only found in Brazil in the streams of the larger forests, where it is met with singly and appears to be very shy. During the nesting-time the birds are found in pairs on the banks of streams and brooks in the woods, especially on the stony shores or sand-bank where rocks and waterfalls occur. They have been observed perching on high trees, in which they also nest. The food and habits are otherwise like those of the ordinary European species.

The eggs do not appear to have been described.

TIGRISOMA.

Tigrisoma, Swains. Zool. Journ. iii. p. 362 (1828); Ridgw. Bull. U. S. Geol. & Geogr. Surv. iv. p. 224 (1878); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 193 (1898).

Heterocnus, Sharpe, Bull. Brit. Orn. Club, v. p. xiv (1895); Cat. Birds Brit. Mus. xxvi. pp. 198, 281.

The American Tiger-Bitterns belong, according to Dr. Bowdler Sharpe, to the same section of the Ardeidæ as the Night-Herons, but they differ from the latter in having the mandibles serrated and the subterminal notch nearly obsolete. The throat is entirely bare or only feathered in the centre, the sides being naked.

Mr. Ridgway points out that in the genus *Tigrisoma* the pectoral and inguinal powder-down tracts are united into a continuous strip, and adds the following characters:—"Tarsus with hexagonal scutellæ in front. Outer toe longer than inner; claws short, strongly curved. Plumage much variegated; feathers of neck loose and fluffy."

Seven species of *Tigrisoma* are recognized, all of them being inhabitants of the Neotropical Region. Three occur within our limits, one species alone, *T. cabanisi*, being met with in Mexico, but not in any part of the Southern United States. This bird differs from the other members of the genus in having the entire throat bare, and on this account it has been separated by Dr. Bowdler Sharpe under a distinct genus, *Heterocnus*.

Very little has been recorded of the habits of these Tiger-Bitterns. *T. salmoni*, of

Colombia and Peru, is said by Stolzmann to be solitary and difficult to observe, being very shy and flying away at the sight of man; he found this bird up to an altitude of 5800 feet, and believes that it even ascends higher, if there are suitable fishing-grounds. It frequents the mountain-streams and feeds on small fish, but we have no record of its breeding.

1. **Tigrisoma lineatum.**

L'Honoré rayé de Cayenne, Daubent. Pl. Enl. viii. t. 860 [1].

Ardea lineata, Bodd. Tabl. Pl. Enl. p. 52 [2].

Tigrisoma lineatum, Sharpe, Cat. Birds Brit. Mus. xxvi. p. 194 [3]; Bangs, Pr. New Engl. Zool. Club, ii. p. 15 [4].

Ardea tigrina, Gm. Syst. Nat. i. p. 638 [5].

Tigrisoma tigrinum, Swains. Zool. Journ. iii. p. 362 [6]; Lawr. Ann. Lyc. N. Y. viii. p. 12 [7].

Tigrisoma brasiliense, Cass. Pr. Acad. Philad. 1860, p. 196 [8]; Lawr. Ann. Lyc. N. Y. vii. p. 301 [9].

Supra saturate brunneum, olivaceo adumbratum, plumis singulis medialiter nigro lineatis et nigro regulariter transfasciatis; dorso imo et supracaudalibus viridi-nigris, vix ochraceo lineatim fasciatis; tectricibus alarum dorso concoloribus, majoribus et secundariis intimis viridescenti-nigris, ochraceo-rufo minute transvermiculatis; remigibus nigris, extus schistaceo lavatis, et anguste albo terminatis; cauda viridescenti-nigra; pileo cristato et collo undique saturate castaneis, hujus plumis paucis nigro fasciatis; faciei collique lateribus saturate castaneis; gula media plumosa rufescente, plaga laterali nuda, fascia alba circumdata; gutture et præpectore longitudinaliter albo striatis, plumis dimidiatim albis et castaneis; corpore reliquo subtus griseo ferrugineo lavato; tibiis, axillaribus et subalaribus nigris, albo transfasciatis; margine alari albo: rostro rufescenti-brunneo, mandibula viridescenti-flava; facie nuda viridescenti-flava; pedibus viridibus; iride læte aurea. Long. tota circa 18·5, alæ 10·7, caudæ 3·9, culm. 3·75, tarsi 3·7. (Descr. avis adulti ex Sarayacu, Ecuador. Mus. nostr.)

Juv. Rufescenti-ochraceum, late regulariter nigro transfasciatum; remigibus nigris, ad apicem ochraceo terminatis; dorso imo, supracaudalibus et rectricibus nigris albo transfasciatis; corpore subtus ochrascente, abdomine albidiore, gutturis et pectoris plumis nonnullis nigro maculatis aut fasciatis; tibiis quoque nigro magis distincte fasciatis; subalaribus et axillaribus nigris, albo distincte transfasciatis.

Hab. Panama (*M'Leannan* [3 7 9]), Lion Hill Station (*Brown* [4]).—Colombia, Delta of the Rio Atrato (*Wood* [8]); Ecuador [3]; Peru [3]; Amazonia [3]; Guiana [3]; Trinidad [3].

This Tiger-Bittern is widely distributed in South America, and extends its range into the State of Panama. It is easily distinguished from *T. cabanisi* by the line of feathers down the throat, the latter being bare only on the sides; the base of the lower mandible is also bare.

Scarcely any notes have been published on the habits of this species. Léotaud says that it is often to be seen in Trinidad among the rushes covering the marshy portions of the island, as well as in the mangroves on the edge of the swamps. The food is similar to that of the larger Herons, and the birds fish apparently by night, as on every occasion that Léotaud observed them during the day they seemed to be asleep.

2. **Tigrisoma excellens.**

Tigrisoma excellens, Ridgw. Pr. U. S. Nat. Mus. x. p. 595 [1]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527 [2]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 193, note [3].

? *Tigrisoma*, sp., Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 11 [4].

Hab. Honduras, Segovia River (*Townsend* [1]); Nicaragua, Rio Escondido (*Richmond* [2]); ? Panama, Laguna de Pita (*Festa* [4]).

We have not seen a specimen of *T. excellens*, of which Mr. Ridgway has given a long description [1], nor are we able to extract any diagnostic characters from his account. He says that it is of the same group as *Tigrisoma brasiliense* (= *T. lineatum* of this work) and *T. salmoni*, "with a feathered stripe along the median line of the chin and throat," and therefore different from *T. cabanisi*.

We must therefore await further material before we can decide on the proper status of this species.

3. Tigrisoma cabanisi.

Tigrisoma tigrinum (nec Gm.), Scl. P. Z. S. 1858, p. 359 [1]; Taylor, Ibis, 1859, p. 151 [2]; Scl. P. Z. S. 1860, p. 253 [3]; Scl. & Salv. Ibis, 1859, p. 226 [4]; Salv. Ibis, 1865, p. 191 [5].

Tigrisoma brasiliense (nec Linn.), Moore, P. Z. S. 1859, p. 63 [6].

Tigrisoma cabanisi, Heine, J. f. Orn. 1859, p. 407 [7]; Salv. Ibis, 1866, p. 205 [8]; P. Z. S. 1870, p. 218 [9]; Cat. Strickl. Coll. p. 520 [10]; Ibis, 1889, p. 376 [11]; Scl. & Salv. P. Z. S. 1867, p. 280 [12]; iid. Exot. Orn. p. 95, t. 48 [13]; Lawr. Ann. Lyc. N. Y. ix. p. 142 [14]; Mem. Bost. Soc. N. H. ii. p. 311 [15]; Bull. U. S. Nat. Mus. no. 4, p. 49 [16]; v. Frantz. J. f. Orn. 1869, p. 376 [17]; Sumichr. La Nat. v. p. 233 [18]; Nutting, Pr. U. S. Nat. Mus. v. p. 406 [19]; vi. p. 379 [20]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 170 [21]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 788 [22]; Underwood, Ibis, 1896, p. 450 [23].

Botaurus cabanisi, Finsch, Abh. nat. Ver. Brem. 1870, p. 357 [24]; Reichen. J. f. Orn. 1877, p. 251 [25].

Heterocnus cabanisi, Sharpe, Cat. Birds Brit. Mus. xxvi. p. 198 [26].

Supra olivascenti-brunneum, plumis singulis sordide ochrascenti-fulvo anguste vermiculatim transfasciatis et medialiter nigro lineatis; remigibus nigricantibus, extus schistaceo lavatis et anguste albo terminatis, secundariis extus brunneo vermiculatis et dorso concoloribus; pileo cristato nigro; facie laterali cinerea, fascia nigra suboculari per latera gulæ nudæ producta et albo variegata; collo toto ochraceo nigroque regulariter transfasciato; gutture medio albo, plumis nonnullis externe schistaceis vel rufis, cæteris nigro transfasciatis collo concoloribus; corpore reliquo subtus saturate ferrugineo, abdomine pallidiore; tibiis grisescentibus; subcaudalibus schistaceis; subalaribus et axillaribus schistaceis, albo transfasciatis, tectricibus minoribus ochraceo fasciatis: rostro nigro, mandibula virescenti-flava; orbitis gulaque nudis virescentibus; pedibus viridescentibus; iride flava. Long. tota circa 33·5, alæ 14·5, caudæ 5·2, culm. 4·35, tarsi 4·45. (Descr. maris adulti ex Presidio, Mexico. Mus. nostr.)

♀ *ad.* mari similis. Long. tota circa 33·5, alæ 13·7. (Descr. feminæ ex Presidio. Mus. nostr.)

Juv. Supra nigricans, ochraceo late transfasciatum; remigibus nigris, albo externe maculatis, intus fasciatis, secundariis intimis ochraceo fasciatis; cauda nigra, regulariter albo anguste transfasciata; pileo colloque undique cum corpore subtus toto ochraceis, regulariter nigro transfasciatis; subalaribus, axillaribus et remigibus intus nigris albo transfasciatis. (Descr. av. juv. ex Presidio. Mus. nostr.)

Hab. Mexico, Mazatlan (*Grayson* [15 23]), Presidio de Mazatlan (*Forrer* [26]), Rio Verde, Hacienda Angostura, San Luis Potosi (*Jouy* [22]), Nuevo Leon (*Armstrong* [26]), San Blas, Tepic, Tamaulipas, Tampico, Sierra Madre above Ciudad Victoria (*Richardson* [26]), Vera Cruz (*Sallé* [3]), Vega del Cazadero, Vera Cruz (*Trujillo* [26]), Vega del Alatorre [21], Misantla [26] (*Ferrari-Perez*), Tapana, Chihuitan, Santa Efigenia, Tehuantepec city, Venta Salada (*Sumichrast* [16]), Tizimin, N. Yucatan [26], Cozumel I. [11]

(*Gaumer*); British Honduras, Belize (*Blancaneaux* [26]); Guatemala, Chiapam, Pacific coast (*O. S.* [5 26]), Juntecholol, Peten (*O. S.* [26]); Honduras, Aloor River, Omoa (*Leyland* [6]), Bird Island [2], Tigré Island, Pacific coast, Lamani near Comayagua (*Taylor* [1 4]); Nicaragua, Chontales (*Belt* [26]), Blewfields (*Wickham* [12]), San Juan del Sur, Pacific coast (*Nutting* [20]); Costa Rica, Miravalles (*Underwood* [23]), San Carlos (*Carmiol* [14], *v. Frantzius* [17]), Rio Macho (*v. Frantzius* [17]), La Palma (*Nutting* [19]); Panama (*M'Leannan* [26]), Bay of Panama (*Kellett & Wood* [10 26]), Laguna del Castillo, Veragua (*E. Arcé* [9 26]).

This species is nearly allied to *T. lineatum*, but may be distinguished at all ages by its bare throat. The head also is black instead of rufous, the abdomen dark cinnamon-colour instead of rufous-grey, and the black-and-white markings on the flanks are wanting.

T. cabanisi occurs throughout Central America, from Mexico to Panama, and is seldom rare throughout its range. At Mazatlan Grayson records it as common and resident, and Sumichrast [18] states that the species occurs on both coasts of Mexico. In Guatemala it came under our notice on several occasions. In April 1862 one was shot on the bank of a small stagnant pool near the village of Juntecholol, on the track from Vera Paz to Peten. It was by no means shy, and resembled in its deliberate movements the Common Bittern of Europe (*Botaurus stellaris*). On the Pacific coast the brackish and salt lagoons in the neighbourhood of Chiapam and Huamachal were found to be favourite resorts, and hardly a day passed without our seeing one or more of them. In Honduras, Leyland [6] says that it is known as the "Barking Garlin," and is common on the rivers and swamps at Aloor River * and Omoa, remaining at the latter place throughout the year.

Mr. Nutting, who found the species exceedingly abundant at La Palma in the Gulf of Nicoya, Costa Rica, writes:—"The curious note of this Bittern is well calculated to startle the inexperienced collector in these regions. It is something between a bark and a growl, and sounds like the angry warning of some fierce animal." Nothing appears to have been published regarding the nest and eggs of the species, but in habits it resembles other Bitterns.

Subfam. *BOTAURINÆ*.

The Botaurinæ differ from the true Herons in having only ten tail-feathers and the mandibles always serrated.

Mr. Ridgway gives the following characters for the subfamily:—"Outer toe decidedly shorter than the inner. Claws long, slender, slightly curved. Two pairs only of powder-down patches. Rectrices very short, soft, only ten in number."

Out of the seven genera recognized by Dr. Sharpe, two occur in America, viz. *Ardetta* and *Botaurus*.

* Dr. Brewer gives the name of this place as "Ulua River."

ARDETTA.

Ardetta, Gray, List Gen. Birds, 1842, App. p. 13; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 221 (1898).

This genus is nearly cosmopolitan in its distribution, being found over the entire temperate and tropical portions of the globe. It belongs to the section of the true Bitterns by reason of its ten tail-feathers, and in style of plumage seems to form an intermediate link between the Bitterns (*Botaurus*) and the Old World Egrets (*Ardeola*). The bill is serrated, and the tarsus somewhat short, and about equal in length to the middle toe and claw. The hinder part of the neck is bare or only scantily clothed with downy plumes, and it is not concealed by a large frill, as is the case with many of the Bitterns. The tibio-tarsus is feathered down to the tarsal joint. There is considerable difference in the colour of the sexes of all the species of *Ardetta*, excepting in *A. involucris* of South America, in which the sexes are alike.

Eight species of this genus are known, of which one is found within our limits.

1. **Ardetta exilis.**

Ardea exilis, Gm. Syst. Nat. i. p. 645[1]; Herrera, La Nat. (2) i. pp. 185[2], 327[3].

Ardetta exilis, Gray, List Grallæ Brit. Mus. p. 38[4]; Lawr. Ann. Lyc. N. Y. viii. p. 12[5]; Mem. Bost. Soc. N. H. ii. p. 310[6]; Bull. U. S. Nat. Mus. no. 4, p. 49[7]; Salv. Ibis, 1866, p. 196[8]; Cat. Strickl. Coll. p. 519[9]; Sumichr. La Nat. v. p. 233[10]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 788[11]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 70[12]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 231[13].

Botaurus exilis, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 170[14]; Stone, Pr. Acad. Philad. 1890, p. 217[15].

Supra nigra, viridi nitens; cauda quoque nigra; tectricibus alarum pallide ochraceis, minimis marginalibus castaneis, majoribus cinnamomeis; remigibus cinerascenti-brunneis, cinnamomeo terminatis; secundariis intimis castaneis, intus cineraceis; pileo vix cristato viridi-nigro; facie laterali et colli lateribus saturate ochraceis, his utrinque læte castaneis; linea superciliari et fascia parva ad basin mandibula castaneis; gutture medio et corpore subtus cinnamomeo-fulvis, illo vix rufescente, lateraliter albido; tibiis ochrascenti-rufis; pectoris lateribus nigris, plumis ochraceo marginatis; subalaribus albidis; remigibus infra pallide schistaceis: rostro olivascenti-brunneo, maxillæ tomiis et mandibula pallide flavis; plaga lorali nuda flava; pedibus viridescenti-flavis; iride flava. Long. tota circa 11·0, alæ 4·8, caudæ 1·7, culm. 1·8, tarsi 1·6. (Descr. maris adulti ex Atitlan, Guatemala. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed lætior, collo clarius castaneo; scapularibus rufo vel ochraceo marginatis.

♀ *ad.* Supra brunnescenti-castanea, scapularibus ochraceo-fulvo marginatis; gutture medio pallide ochraceo, nigro striolatim variegato, gulæ lateribus albis; pectore laterali nigro, plumis ochraceo marginatis; corpore reliquo subtus pallide ochraceo, hypochondriis anguste nigro lineatis; abdomine et subcaudalibus albis. Long. tota circa 11·0, alæ 4·7. (Descr. feminæ adultæ ex Atitlan, Guatemala. Mus. nostr.)

Juv. Supra rufescenti-castanea, plumis singulis ochraceo marginatis; pileo nigro, rufo lavato; collo postico et laterali castaneo; facie laterali et gutture sicut in femina adulta notato, sed maculis linearibus nigris latioribus; corpore reliquo subtus ochraceo, plumis medialiter nigro lineatis, abdomine et subcaudalibus albis, ochraceo lineatis; pectoris lateribus castaneis, hypochondriis saturate ochraceis, nigro striolatim lineatis. (Descr. av. juv. ex Dueñas. Mus. nostr.)

Hab. Temperate North America, north to the British Provinces[12].—Mexico (*Hay*[13]), Mazatlan (*Grayson*[6]), Valley of Mexico (*Herrera*[2 3]), city of Mexico (*Elwes*[13]), Lake Patzcuaro (*Baker*[15], *Jouy*[11]), Laguna del Baltazar, Laguna de San Felipe

(*Ferrari-Perez* [14]), Tehuantepec [10] (*Sumichrast*); Guatemala (*Constancia* [9]), Lake of Dueñas (*O. S.* [8 13]), Coban (*O. S.* [8]), Atitlan (*Richardson* [13]); Panama, Lion Hill Station (*M'Leannan* [5 13]).—West Indies [13].

The Least Bittern of North America represents the Little Bittern (*A. minuta*) of Europe. It is recorded as a resident in many parts of Canada, and is found in suitable localities throughout the whole of the United States. *A. exilis* probably breeds in Central America, as the young birds obtained by us in Guatemala in September had no doubt been reared in that country, since we procured both adult and immature examples. The species nests in Cuba and probably also in Jamaica, but occurs on the Bermudas only during migration, and doubtless many individuals visit Central America in the winter season.

The fact that *A. exilis* is a migrant proves, as Dr. Brewer has pointed out, that the bird must possess some strong powers of flight; but, as a rule, it is not easily flushed, and prefers to save itself by running through the tangled rushes and herbage which surround its favourite haunts. Through these the bird threads its way with ease, and is also equally at home among the sedges or the twigs of trees overhanging the water, and though of a sluggish disposition during the day, it is active enough at night. This small Bittern appears to be less fond of fish than the larger kinds of Herons, its food consisting of snails, small frogs and lizards, with occasionally small rodents.

The nest is a frail structure of dry reeds, placed at a foot or two above the water and supported by the surrounding rushes. The eggs are from four to seven in number, white, slightly tinged with green.

BOTAURUS.

Botaurus, Briss. Orn. v. p. 444 (1760); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 59 (1898).

The members of the genus *Botaurus* are large birds, remarkable for their mottled plumage and for the large frill which envelops each side of the neck. The bill is serrated, and the culmen is about the same length as the inner toe and claw. The middle toe is long, exceeding, with its claw, the length of the tarsus. The hind claw is very strong and greatly developed, being nearly equal to the hind toe itself in length.

Five species of Bitterns are known, of which two are strictly American, both occurring within our limits.

1. Botaurus lentiginosus.

Ardea lentiginosus, Montagu, Orn. Dict. Suppl.[1]

Botaurus lentiginosus, Stephens, in Shaw's Gen. Zool. xi. pt. 2, p. 596, t. 46 [2]; Scl. P. Z. S. 1856, p. 310 [3]; 1859, p. 369 [4]; Salv. Ibis, 1860, p. 194 [5]; 1866, p. 196 [6]; Lawr. Ann. Lyc. N. Y. vii. p. 478 [7]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 170 [8]; Jouy, Pr. U. S. Nat. Mus.

xvi. p. 788[9]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 70[10]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 259[11].

Ardea minor, Wilson, Amer. Orn. viii. p. 35, t. 65. fig. 3[12].

Botaurus minor, Dugès, La Nat. i. p. 142[13]; Lawr. Mem. Bost. Soc. N. H. ii. p. 310[14]; Sumichr. La Nat. v. p. 233[15].

Ardea mokoho, Vieill. N. Dict. d'Hist. Nat. xiv. p. 440[16]; Wagler, Isis, 1831, p. 531[17].

Supra rufescens, brunneo vermiculatim fasciatus; dorso postico et uropygio ochraceis, brunneo vermiculatis; tectricibus alarum quoque ochraceis, sparsim brunneo vermiculatis; remigibus nigricantibus, apicem versus rufis nigro vermiculatis; secundariis rufescentibus, dorso concoloribus, et eodem modo vermiculatis; pileo nigricante, plumis rufo marginatis; supercilio lato rufo; facie laterali colloque ochraceis; gutture albo, fascia mediana lata pallide rufescente, plumis vix nigro fasciolatis, præpectore eodem modo striato; plaga nigra ad latera gulæ posita; hypochondriis late rufo striatis; abdomine pallidiore ochraceo; axillaribus et subalaribus ochraceis, iis brunneo vermiculatim transfasciatis; maxilla olivascenti-nigra, mandibula pallide flava; pedibus flavicanti-viridibus; iride pallide flava. Long. tota circa 18·5, alæ 10·5, caudæ 3·7, culm. 2·95, tarsi 3·6. (Descr. maris adulti ex Chapulco. Mus. nostr.)

♀ haud a mari distinguenda. Long. tota circa 8·5, alæ 10·5. (Descr. spec. ex Manitoba. Mus. Brit.)

Juv. vix ab adultis distinguendus, corpore subtus saturatiore rufo striato, plumis clarius nigro vermiculatis. (Descr. exempl. ex Florida. Mus. nostr.)

Hab. Temperate North America[10], north to Manitoba and Columbia[11].—Mexico (*Wagler*[17]), Mazatlan (*Grayson*[14]), Guanajuato (*Dugès*[13]), Lake Patzcuaro (*Jouy*[9]), Laguna del Rosario[8], Chapulco, Puebla[11] (*Ferrari-Perez*), Valley of Mexico, Orizaba (*Sumichrast*[15]), Cordova (*Sallé*[3]), Jalapa (*de Oca*[4]); Guatemala, Coban[5 11], Dueñas[6] (*O. S.*); Panama (*M'Leannan*[7]).

B. lentiginosus is found over the greater part of the North-American continent in localities suited to its habits. It occurs throughout Central America, but apparently only in the winter months. Grayson says that at Mazatlan he met with it from October to March, but he was not certain of its being a summer resident.

Like other Bitterns, this is a marsh-loving bird, and is principally nocturnal in its habits, uttering a loud booming note like that of its European relative, *B. stellaris*. The food consists of fish, frogs, and lizards, as well as field-mice.

The nest is described as a rough structure of reeds &c., placed on the ground and never in trees or bushes. In some localities it is placed above the level of the earth, where there is any danger of the eggs becoming swamped by a rise of water, in others no nest at all is made, and the eggs are deposited on the ground among the herbage.

The latter are generally four in number, though occasionally as many as seven, according to Capt. Bendire. They are of a brownish-drab colour.

2. **Botaurus pinnatus.**

Ardea pinnata, Wagler, Isis, 1829, p. 663[1].

Botaurus pinnatus, Gray, Gen. Birds, iii. p. 557[2]; Lawr. Ann. Lyc. N. Y. viii. p. 184[3]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 262[4].

Supra niger, saturate ochraceo variegatus, plumis singulis utrinque ochraceo indentatis vel fasciatis; dorso imo, uropygio et supracaudalibus nigris ochraceo fasciatis et variegatis; remigibus nigris, ochraceo-rufo apicem versus terminatis fusco variegatis; cauda virescenti-nigra; pileo nigro; facie laterali et collo undique ochraceo late nigro fasciatis; gula alba; gutture medio pallide cinnamomeo, vix nigro fimbriato, lineam longitudinalem formante; præpectore quoque eodem modo striato; pectoris plumis lateralibus lanceolatis nigro et rufo longitudinaliter variegatis; corpore reliquo subtus stramineo-fulvo, hypochondriis brunneo fasciolatim variegatis; subalaribus et axillaribus ochraceis, fusco transfasciatis: rostro nigro, mandibula brunnescenti-flava; loris nudis fuscescenti-flavis; iride nitide flava. Long. tota circa 31·0, alæ 13·3, caudæ 4·65, culm. 3·45, tarsi 4·2. (Descr. avis adult. ex Aunai, British Guiana. Mus. nostr.)

Juv. similis adulto, sed magis ochraceo-rufescens, nigro variegatus; pileo nigro ochraceo transfasciato; facie laterali ochracea fere concolore; gutture toto albo; corpore reliquo subtus pallide ochrascente, plumis medialiter rufescentibus, quasi longitudinaliter striatis, nigro paullulum fimbriatis et vermiculatis; tibiis ochraceis, anguste brunneo transfasciatis. (Descr. feminæ juv. ex Rio de Janeiro. Mus. Brit.)

Hab. NICARAGUA, Greytown (*Holland* [3]).—GUIANA [4]; BRAZIL [4].

This is a rare species in collections, but is nevertheless a very distinct one, as it differs from all the other Bitterns in having the head barred with black and sandy-buff like the neck-frill; in *B. lentiginosus* and the Old-World Bitterns the head is uniform brown or black.

Although distributed over the greater part of Tropical South America, it is nowhere very common, and its occurrence in Central America requires confirmation, for Mr. Lawrence expresses some doubt as to his identification of the Nicaragua specimen above recorded. We think, however, that there is no other species to which the latter could be referred.

We take the following remarks from Sclater and Salvin's 'Exotic Ornithology':—"Upon comparing *B. pinnatus* with *B. lentiginosus*, it is not difficult to point out many obvious differences. The under-plumage of the two birds is much alike, except that in the former the throat is pure white, and wants the two conspicuous black stripes which in *B. lentiginosus* border each side of the neck. Above the two allies are very different, the whole upper plumage in *B. pinnatus* being conspicuously crossed by numerous transverse bars, which are entirely wanting in *B. lentiginosus* and are replaced on the scapulars, outer margins of secondaries, and wing-coverts with dense freckling. It is this difference in the wing-markings, we suppose, which led Lichtenstein to call the present bird *pinnatus*. Another conspicuous character of this Bittern is the length of the hind toe and great size of the claw. In the specimen now before us the hind toe is two inches, and its claw nearly one inch and a half in length. In a skin of *B. lentiginosus* the corresponding dimensions are 1·5 in., 1·1 in. The tarsi of the two species hardly differ in length."

Beyond the fact that this Bittern has similar habits to the European *B. stellaris*, nothing has been published respecting its mode of life or nidification.

Fam. CANCROMIDÆ.

Dr. Sharpe considers the Boatbills to be an exaggerated form of Night-Heron, but we prefer to follow Mr. Ridgway in recognizing them as a distinct family of the Herodiones. The possession of four pairs of powder-down tracts, and the remarkable beak, from which the Boatbills gain their name, are sufficient to distinguish them from any of the Heron-like birds, though, as regards this latter feature, they bear some resemblance to the African Whale-headed Stork (*Balæniceps*), which, besides differing in many osteological characters, is distinguished by its much larger size and more sombre plumage.

The family contains but a single genus.

CANCROMA.

Cancroma, Linn. Syst. Nat. i. p. 233 (1766); Ridgw. Bull. U. S. Geol. & Geogr. Surv. ii. p. 220 (1878); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 163 (1898).

This genus contains but two species—one the Common Boatbill of South America, *C. cochlearia*, and the other its Central-American representative, *C. zeledoni*.

1. Cancroma zeledoni.

Cancroma cochlearia (nec Linn.), Scl. P. Z. S. 1857, pp. 206[1], 230[2]; 1859, p. 369[3]; Scl. & Salv. Ibis, 1859, p. 227[4]; Salv. Ibis, 1864, p. 387[5]; P. Z. S. 1870, p. 218[6]; Ibis, 1889, p. 376[7]; Lawr. Ann. Lyc. N. Y. vii. p. 478[8]; ix. p. 142[9]; Mem. Bost. Soc. N. H. ii. p. 310[10]; Bull. U. S. Nat. Mus. no. 4, p. 48[11]; v. Frantz. J. f. Orn. 1869, p. 376[12]; Finsch, Abhandl. nat. Ver. Bremen, 1870, p. 358[13]; Sumichr. La Nat. v. p. 233[14]; Nutting, Pr. U. S. Nat. Mus. v. p. 406[15]; vi. p. 396[16]; Boucard, P. Z. S. 1883, p. 458[17].

Cancroma zeledoni, Ridgw. Pr. U. S. Nat. Mus. viii. p. 93[18]; Zeled. An. Mus. Nac. Costa Rica, 1887, p. 130[19]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 165[20].

Cochlearius zeledoni, Stejn. Stand. Nat. Hist. iv. p. 178[21]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 171[22]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527[23]; Chapm. Pr. U. S. Nat. Mus. xviii. p. 697[24]; Bangs, Pr. New Engl. Zool. Club, ii. p. 15[25].

Supra clare cinerea, remigibus rectricibusque margaritaceo-cinereis, primariis extus clarioribus; pileo, valde cristato, nigro; fronte cinerascenti-alba; facie laterali grisescenti-vinacea; gula nuda, gutture imo albicante; præpectore et pectore summo pallide vinaceo-brunneis; pectore reliquo cum abdomine et subcaudalibus saturatioribus, vinaceo-castaneis; corporis lateribus cum axillaribus et subalaribus interioribus nigris; subalaribus externis et remigibus infra pallide cinereis; margine alari albo: rostro nigro; pedibus dilute viridibus; iride nigra. Long. tota circa 17·0, alæ 10·7, caudæ 4·0, culm. 3·0, tarsi 2·8. (Descr. maris adulti ex Momotombo, Nicaragua. Mus. nostr.)

♀ mari similis, sed saturatior, plumbescens, gutture imo et præpectore magis cinnamomeis, schistaceo lavatis. Long. tota circa 17·0, alæ 11·0. (Descr. feminæ adultæ ex Vina de Chorcha, Panama. Mus. nostr.)

Juv. Brunnescens, plus minusve schistaceo adumbrata; remigibus rectricibusque clare schistaceis; pileo paullo cristato, nigro; fronte schistacea; corpore subtus pallide cineraceo, vix vinaceo lavato, plumis medialiter albido striatis. (Descr. av. juv. ex Atoyac, Mexico. Mus. nostr.)

Hab. Mexico, both coasts (*Sumichrast* [14]), Mazatlan (*Bischoff* [18], *Grayson* [10 13]), Tampico (*Richardson* [20]), Alta Mira (*Armstrong* [24]), San Andres Tuxtla, Vera Cruz (*Sallé* [1]), Cateman (*Boucard* [2]), La Antigua (*Trujillo* [20]), Atoyac (*Mrs. H. H. Smith* [20]), Jalapa (*de Oca* [3]), Plan del Rio, Santa Ana (*Ferrari-Perez* [20]), Paso de la Milpa (*Ferrari-Perez* [22]), Tehuantepec (*Richardson* [20]), Santa Efigenia (*Sumichrast* [11]), N. Yucatan [20], Rio Lagartos [17], Cozumel I. [7 20] (*Gaumer*); British Honduras, Grassy Cay (*O. S.* [5]); Guatemala, Atlantic coast (*Skinner* [4]), Pacific coast [4], Las Salinas [20] (*O. S.*); Nicaragua, Rio Escondido (*Richmond* [20 23]), Momotombo (*Richardson* [20]), Ometépe I., Lake of Nicaragua (*Nutting* [16]); Costa Rica (*v. Frantzius* [12]), Rio Grande (*Cooper* [9]), Pozo Azul de Pirris, Las Trojas (*Zeledon* [19]), Rio Frio (*Richmond* [23]), La Palma, Gulf of Nicoya (*Nutting* [15]); Panama (*M'Leannan* [8]), Mina de Chorcha (*E. Arcé* [6 20]), Lion Hill Station (*Brown* [25]).

The northern form of Boatbill, *C. zeledoni*, is, like *Tigrisoma cabanisi*, a species peculiar to the Central-American subregion, where it is plentifully distributed in suitable localities.

Salvin found it on different occasions on the Cays of British Honduras and in Guatemala, skulking in the mangroves, also amongst the forest-swamps on the Pacific coast. In Costa Rica Mr. Nutting met with Boatbills associating in small flocks like Night-Herons, which they resemble in their harsh croak and in their nocturnal habits. Mr. Richmond noticed several colonies on the Rio Frio.

Nothing has been recorded of the nidification of this bird.

Fam. CICONIIDÆ.

The Storks resemble both the Herons and the Cranes in outward appearance, and their young require, like those of the former, to be fed by their parents for some time.

The characters which divide the Storks from the Herons are: the elevation of the hallux or hind toe, which is not on the same level as the others, the absence of powder-down patches on the body, and the comb on the claw of the middle toe. There are also several other distinctions between the two families, osteological and otherwise.

The Ciconiidæ are divisible into two subfamilies—the true Storks (Ciconiinæ) and the Wood-Ibises (Tantalinæ), both of which are represented in the New World.

Subfam. *CICONIINÆ*.

All the true Storks have a powerful and straight bill, with no downward curve at the end of the mandibles. Mr. Ridgway has given a very complete account of the characters which distinguish the Ciconiinæ, from which we select the following:—"Bill elongate-conical, acute, compressed, the end not decurved. Nostrils lateral rather than

superior. Toes very short, the middle one shortest, much less than half the length of the tarsus (little more than one-third); lateral toes nearly equal; claws short, broad, and nail-like."

Storks are found in all parts of the globe, but only one species (*Mycteria americana*) occurs in Central America.

MYCTERIA.

Mycteria, Linn. Syst. Nat. i. p. 232 (1766); Ridgw. Bull. U. S. Geol. & Geogr. Surv. iv. p. 249 (1878); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 314 (1898).

The single described species of *Mycteria*, the Jabiru, an inhabitant of the warmer parts of America, is very well known, on account of its enormous and powerful bill, the end of which is turned up to a sharp point, the bill, in fact, being as long as the tarsus of the bird's leg. The head and neck are bare, with the exception of a small patch of down on the occiput.

1. Mycteria americana.

Mycteria americana, Linn. Syst. Nat. i. p. 232[1]; Salv. Ibis, 1865, p. 197[2]; 1866, p. 196[3]; Nutting, Pr. U. S. Nat. Mus. v. p. 407[4]; vi. p. 389[5]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526[6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 69[7]; Underw. Ibis, 1896, p. 450[8]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 314[9].

Sericeo-alba, rostro et pedibus nigris; iride brunnea; gula nuda scarlatina. Long. tota circa 50·0, alæ 24·0, caudæ 7·8, culm. 12·5, tarsi 12·0. (Descr. maris ad. ex Huamachal. Mus. nostr.)

Hab. North America, Southern Texas[4].—Guatemala, Huamachal (*O. S.*[2 3]); Nicaragua, Rio Escondido (*Richmond*[6]); Costa Rica, La Palma, Gulf of Nicoya[4], Sucuyá[5] (*Nutting*), Miravalles (*Underwood*[8]), Rio Frio (*Richmond*[6]).—South America generally[9].

This magnificent Stork occurs in Central America, from Guatemala to Costa Rica; but, though not recorded from Mexico, it has occasionally been met with in Southern Texas. We found *M. americana* in the vicinity of the half-dry brackish lakes of Huamachal, but it was nowhere common. Mr. Underwood gives the following note of the species in Costa Rica:—"I occasionally saw these big birds in lagoons; they generally go in pairs, and can be seen daily at the same spot. The native name is 'Galan sin ventura' (=The Luckless Gallant)."

The nest is said to be built on high trees, and the eggs are bluish-green in colour.

Subfam. *TANTALINÆ*.

The chief character distinguishing the Wood-Ibises from the Storks is the form of the bill, which is smooth and distinctly curved downward at the end. Mr. Ridgway gives the following notes, which may be compared with his definition of the subfamily

Ciconiinæ (*anteà*, p. 186):—" Bill elongated, subconical, subcylindrical, the end attenuated and decurved, with the tip rounded; nostrils decidedly superior; toes long, the middle one half or more the length of the tarsus; lateral toes unequal, the outer decidedly longer than the inner; claws moderately lengthened, rather narrow, claw-like."

One genus of Wood-Ibises is found in America; while in the Old World a second, *Pseudotantalus*, occurs in Tropical Asia and Africa, distinguished by having the neck feathered.

TANTALUS.

Tantalus, Linn. Syst. Nat. i. p. 240 (1766); Ridgw. Bull. U. S. Geol. & Geogr. Surv. iv. p. 249 (1878); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 321 (1898).

1. Tantalus loculator.

Wood Pelican, Catesby, Nat. Hist. Carol. i. p. 81, t. 81 [1].

Tantalus loculator, Linn. Syst. Nat. i. p. 240 [2]; Wagler, Isis, 1831, p. 530 [3]; Scl. & Salv. Ibis, 1859, p. 227 [4]; Scl. P. Z. S. 1860, p. 253 [5]; Lawr. Ann. Lyc. N. Y. vii. p. 334 [6]; Mem. Bost. Soc. N. H. ii. p. 309 [7]; Bull. U. S. Nat. Mus. no. 4, p. 48 [8]; Salv. Ibis, 1865, p. 193 [9]; 1889, p. 376 [10]; Dugès, La Nat. i. p. 142 [11]; Frantz. J. f. Orn. 1869, p. 376 [12]; Sumichr. La Nat. v. p. 233 [13]; Nutting, Pr. U. S. Nat. Mus. v. p. 407 [14]; vi. p. 379 [15]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 81 [16]; Ferrari-Peraz, Pr. U. S. Nat. Mus. ix. p. 171 [17]; Herrera, La Nat. (2) i. pp. 187 [18], 328 [19]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527 [20]; A. O. U. Check-l. N. Amer. Birds, p. 69 [21]; Underwood, Ibis, 1896, p. 449 [22]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 321 [23].

Pure albus; ala spuria, remigibus rectricibusque nigris, æneo-viridi et purpureo nitentibus, secundariis intimis dorso concoloribus: subtus albus, subcaudalibus longissimis vix filamentosis albis; capite et collo nudis livide cyanescentibus, purpurascentibus, scabiosis, pileo summo grisescenti-flavo: rostro sordide flavicanti-brunneo; pedibus indigotico-cyaneis, digitis nigris, cærulescenti-griseo squamatis, palmis pallide flavescenti-carneis, unguibus nigris; iride saturate corylina. Long. tota circa 32·0, alæ 18·6, caudæ 5·75, culm. 8·0, tarsi 7·5. (Descr. maris adulti ex Ins. Cozumel. Mus. nostr.)

Juv. adultis similis, sed magis grisescens, capite et collo magis plumosis, nuchæ et colli postici plumis fuscescenti-nigris.

Hab. North America, Southern United States from the Ohio Valley, Colorado, Utah, S.E. California, &c., casually northwards to Pennsylvania and New York [21].—Mexico (*Wagler* [3]), hot and temperate regions of both coasts [13], Santa Efigenia [8] (*Sumichrast*), Mazatlan (*Grayson* [7]), Presidio (*Forrer* [23]), San Blas, Tepic (*Richardson* [23]), Guanajuato (*Dugès* [11]), Valley of Mexico (*Herrera* [18 19]), Jalapa, Vega de Alatorre (*Ferrari-Perez* [17]), Vera Cruz (*Sallé* [5]), Cozumel I. (*Gaumer* [10 23]); Guatemala, Pacific coast [4], Chiapam [9], Huamachal [23], Coban [23] (*O. S. & F. D. G.*); Nicaragua, Rio Escondido (*Richmond* [20]), San Juan del Sur (*Nutting* [15]); Costa Rica, San José (*v. Frantzius* [12]), Rio Frio (*Richmond* [20]), La Palma, Gulf of Nicoya (*Nutting* [14]), Miravalles (*Underwood* [22]); Panama (*M'Leannan* [6]).—South America generally to Argentina [23].

The Wood-Ibis inhabits the Gulf States of North America and Florida, as well as some of the Central United States. It is resident in Mexico, where Sumichrast gives its habitat as the hot and temperate parts of both coasts, and Grayson says that it is abundant at Mazatlan at all seasons. We found the "Alcatraz," as it is called, not uncommon about the rivers in the forests of the Pacific coast of Guatemala, and Mr. Richmond states that it was plentiful in a marsh on the Rio Escondido[20] in Nicaragua. It breeds in Cuba, and also in many parts of South America.

In habits *T. loculator* resembles many of the Herons and Storks, but it is more gregarious, assembling in large flocks during the spring and circling in the air after the manner of Turkey Vultures, and nesting in communities numbering (according to the late Dr. Bryant) at least a thousand. The food consists of crustaceans, fish, small rodents, insects, &c.

The nests are large, composed of small twigs lined with moss; they are placed on trees, often at such a height as to be quite inaccessible. The eggs are white, generally three in number.

Fam. PLATALEIDÆ.

The Spoonbills resemble the Herons in having a desmognathous palate, but differ from them, as also from the Steganopodes, in their schizorhinal nostrils. Mr. Ridgway, in his paper on American Herodiones, distinguishes the Spoonbills and Ibises from the Herons by the following characters:—Sides of the maxilla with a deep and narrow groove, extending uninterruptedly from the nasal fossæ to the extreme tip of the bill; angle of the mandible produced and decurved.

The peculiar flat bill, narrow in the middle and then widening out into a broad spatula, is sufficient to distinguish the Plataleidæ from the Ibises.

PLATALEA.

Platalea, Linn. Syst. Nat. i. p. 231 (1766).
Ajaja (Reichenb.), Sharpe, Cat. Birds Brit. Mus. xxvi. p. 52 (1898).

The characters given above for the family are the same as those of the genus, of which six species are known. Spoonbills are found throughout the temperate and tropical portions of both hemispheres. Some naturalists recognize three genera, separating the Australian Spoonbill from the typical forms on account of the want of an occipital crest, and the development of ornamental plumes on the chest and inner secondaries. The American bird differs from its Old-World allies in having the head bare, the auricular orifice being exposed, and the species has been separated, by some ornithologists, as a distinct genus, *Ajaja*. It also has a remarkable trachea, unlike that of any other known bird (*cf.* Garrod, P. Z. S. 1875, p. 300).

1. Platalea ajaja.

Platalea ajaja, Linn. Syst. Nat. i. p. 231[1]; Scl. P. Z. S. 1857, p. 206[2]; Scl. & Salv. Ibis, 1860, p. 402[3]; Salv. Ibis, 1865, p. 191[4]; 1889, p. 376[5]; Lawr. Ann. Lyc. N. Y. ix. p. 142[6]; Mem. Bost. Soc. N. H. ii. p. 309[7]; Bull. U. S. Nat. Mus. no. 4, p. 48[8]; Dugès, La Nat. i. p. 142[9]; v. Frantz. J. f. Orn. 1869, p. 376[10]; Finsch, Abhandl. nat. Ver. Bremen, 1870, p. 358[11]; Boucard, P. Z. S. 1878, p. 44[12]; 1883, p. 458[13]; Sumichr. La Nat. v. p. 233[14].

Ajaja ajaja (Reichenb.), Herrera, La Nat. (2) i. pp. 187[15], 328[16]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 67[17]; Richm. Pr. U. S. Nat. Mus. xvi. p. 527[18]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 52[19].

Platalea ayaya, Licht. Preis-Verz. Mex. Vög. p. 3[20]; Cab. J. f. Orn. 1863, p. 59[21]; Wagler, Isis, 1831, p. 530[22].

Ajaja rosea, Nutting, Pr. U. S. Nat. Mus. v. p. 407[23]; vi. p. 379[24]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 102[25]; Underwood, Ibis, 1896, p. 450[26].

Alba, roseo-induta; tectricibus alarum minimis et supracaudalibus lætioribus, coccineis; remigum et rectricum rhachidibus pallide coccineis; rectricibus medianis et reliquorum pogoniis externis saturate ochraceis; præpectoris plumis pallide coccineis, recurvatis, plagam conspicuam formantibus: rostro pallide virescenti-cyaneo, basaliter flavicanti-griseo; pedibus pallide coccineis; capite nudo flavescenti-viridi; regione oculari et gutture nudo aurantiacis; fascia nuda nigra, a mandibula basali usque ad occiput conjuncta; iride læte coccinea. Long. tota circa 26·0, alæ 14·5, caudæ 4·3, culm. 6·6, tarsi 4·4. (Descr. avis adultæ ex Florida. Mus. nostr.)

♀ mari similis, sed minor. Long. tota circa 21·0, alæ 13·3.

Juv. adultis similis, sed minus rosacea, remigum et rectricum pogoniis nigris, primariis externis extus et apicem versus nigricantibus.

Hab. North America, Southern Atlantic and Gulf States, formerly north to Southern Illinois[17].—Mexico (*Deppe & Schiede*[20 21], *Wagler*[24]), both coasts[14], Santa Efigenia[8] (*Sumichrast*), Mazatlan (*Grayson*[7 11]), Presidio de Mazatlan (*Forrer*[19]), Santa Ana, Jalisco (*Lloyd*[19]), Guanajuato (*Dugès*[9]), Valley of Mexico (*Herrera*[15 16]), Tamesi, Tampico (*Richardson*[19]), Jalapa (*Sallé*[2]), Rio Lagartos, Yucatan[13], Cozumel I.[5 19] (*Gaumer*); Guatemala, Lake of Dueñas (*Constancia*[3]), Chiapam[4], Huamachal[19] (*O. S.*); Nicaragua, San Juan del Sur, Pacific coast (*Nutting*[24]); Costa Rica (*Dow*[6]), San José (*Boucard*[12]), Pirris, Tirribi (*v. Frantzius*[10]), Miravalles (*Underwood*[26]), Rio Frio (*Richmond*[18]), La Palma, Gulf of Nicoya (*Nutting*[23]); Panama, Veraguas (*Arcé*[19]).—South America generally[19].

The Rosy Spoonbill inhabits Texas and Florida and the adjacent Gulf States, but in far less numbers than formerly, owing to the persecution to which it has been subjected of recent years. The species is common at Mazatlan throughout the summer months, and in the Valley of Mexico[15 16] during the period of migration in February; it also occurs in winter on the eastern coasts[14] of Yucatan[13], where it is called "Chocolatera" by the Spaniards.

We did not find many in Guatemala, and only obtained specimens in the lagoons near Chiapam and Huamachal on the Pacific coast. *P. ajaja* is found abundantly in

the Gulf of Nicoya in Costa Rica, and thence is distributed, in places suitable to its habits, over the greater part of the South-American continent.

The Spoonbill is occasionally gregarious, sometimes breeding in large colonies; at other times it consorts and feeds in company with various species of Herons. Its food consists of small fishes, water-insects, minute crustacea, and shell-fish. The nests are made of sticks, and placed on bushes and mangrove-trees, or on the reeds in swamps. The eggs are two or three in number, dull white, with sepia-brown and rufous spots.

Fam. IBIDIDÆ.

The Ibises differ from the Herons in the same fundamental characters as do the Spoonbills, and they have a similar schizorhinal skull. The form of the bill, however, is quite different, and is described by Mr. Ridgway as follows:—"Bill slender, attenuated terminally, nearly cylindrical or somewhat compressed, conspicuously decurved, or arched above."

This is a cosmopolitan family, inhabiting the temperate and tropical portions of both hemispheres. The American genera are, for the most part, quite distinct from those of the Old World, but the Glossy Ibis (*Plegadis falcinellus*) is found on both sides of the Atlantic. The four other forms mentioned in this volume are strictly American.

EUDOCIMUS.

Eudocimus, Wagler, Isis, 1832, p. 1232; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 39 (1898).

The Ibididæ are separable into two groups—those which have the front of the tarsus reticulated, and those which have it plated with distinct transverse scales. It is to this second section that the genus *Eudocimus* belongs. Like *Plegadis*, it has a very short tail, not half the length of the wing, and exceeded by the feet, when the latter are outstretched. The chin and upper throat are bare, as are also the forehead, lores, sides of face, and region of the eye.

Two species of *Eudocimus* are recognized—one of them, *E. ruber*, being the well-known and brilliantly-coloured "Scarlet Ibis" of South America, while the other is the White Ibis (*E. albus*), which is a more northern form.

1. Eudocimus albus.

The White Curlew, Catesby, N. Hist. Carol. i. p. 82, t. 82[1].

Tantalus albus, Linn. Syst. Nat. i. p. 242[2].

Ibis alba, Vieill. N. Dict. d'Hist. Nat. xvi. p. 16[3]; Licht. Preis-Verz. Mex. Vög. p. 3[4]; Cab. J. f. Orn. 1863, p. 59[5]; Scl. P. Z. S. 1857, p. 230[6]; Salv. Ibis, 1865, p. 192[7]; Dresser, Ibis, 1866, p. 32[8]; Lawr. Mem. Bost. Soc. N. H. ii. p. 309[9]; id. Bull. U. S. Nat. Mus. no. 4, p. 48[10]; Sumichr. La Nat. v. p. 233[11].

Eudocimus albus, Scl. & Salv. Ibis, 1860, p. 402 [12]; Dugès, La Nat. i. p. 142 [13]; Salv. Ibis, 1864, p. 387 [14]; 1889, p. 376 [15]; Nutting, Pr. U. S. Nat. Mus. v. p. 407 [16]; vi. pp. 379 [17], 389 [18]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 89 [19]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 39 [20]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 12 [21].

Guara alba, Stejn. Stand. Nat. Hist. iv. p. 9 [22]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 171 [23]; A. O. U. Check-l. N. Amer. Birds, p. 67 [24].

Pure albus, primariis extimis ad apicem nitide viridi-nigris: rostro et facie nuda coccineis vel aurantiacis; pedibus coccineis; iride margaritaceo-cyanea. Long. tota circa 22·0, alæ 11·4, caudæ 4·0, culm. 6·2, tarsi 3·85. (Descr. exempl. adulti ex Chiapam. Mus. nostr.)

♀ mari similis, sed multo minor. Long. tota circa 23·0, alæ 10·9. (Descr. feminæ adultæ ex Texas. Mus. nostr.)

Juv. Supra brunneus, alis æneo-viridi nitentibus; dorso postico, uropygio et supracaudalibus albis; cauda brunnea, basin versus alba; pileo et collo toto fuscescenti-brunneis, albido striolatis; faciei et gulæ plumis cano marginatis; corpore reliquo subtus albo. (Descr. av. juv. ex Ins. Cozumel. Mus. nostr.)

Hab. North America, South Atlantic and Gulf States, north to North Carolina, Southern Illinois, Great Salt Lake, and Lower California, casually to Long Island, Connecticut, and South Dakota [24].—Mexico (*Deppe & Schiede* [4 5]), hot regions of both coasts [11], San Mateo, Tehuantepec [10] (*Sumichrast*), Presidio (*Forrer* [20]), Mazatlan (*Grayson* [9]), Guanajuato (*Dugès* [13]), Matamoros (*Dresser* [8]), Tampico, Tamesi (*Richardson* [20]), Actopam, Jalapa, Vera Cruz (*Ferrari-Perez* [23]), Santecomapam (*Boucard* [6]), La Antigua (*Trujillo* [20]), Cozumel I. (*Gaumer* [15 20]); British Honduras, Belize, Golden Stream Cays [12], Grassy Cay [14] (*O. S.*); Guatemala, Chiapam, Pacific coast (*O. S.* [7]); Nicaragua, San Juan del Sur, Pacific coast [17], Sucuyá, Lake Nicaragua [18] (*Nutting*), Momotombo (*Richardson* [20]); Costa Rica, La Palma, Gulf of Nicoya (*E. Arcé* [20], *Nutting* [16]).—Amazonia [20]; Peru [20]; West Indies [20].

The White Ibis is found in the Southern United States, and its range extends to the interior of North America, as mentioned in the above summary of the distribution of the species. In Mexico it is met with in the hot regions of both coasts [11], but, though we have specimens from various parts of that country, there is no evidence that it breeds there. Salvin noticed the species on some of the Cays of British Honduras as late as April; but it was not numerous either there or in Guatemala, where we only obtained specimens at Chiapam on the Pacific coast. Mr. Nutting saw many examples in the Gulf of Nicoya, in Costa Rica, and says that it was less shy than most kinds of water-birds. It is therefore probable that the White Ibis is chiefly, if not entirely, a winter visitor to the whole of Central America, as it is to Brazil and other parts of South America.

E. albus breeds in immense colonies, in company with Herons and other water-birds. It constructs a nest of sticks and roots, more than a foot in diameter and with a flat interior, placing it on trees, bushes, cactuses, &c.; and Audubon relates that he found no less than forty-seven on a wild plum-tree on an island off the coast of Florida.

In habits this bird much resembles a Curlew, procuring its food on the mud-flats both by night and day, according to the tides, and travelling twenty or thirty miles to suitable places for this purpose. Like other Ibises and Herons, the present species is fond of performing evolutions in the air, and is of powerful flight.

The eggs are dull white, with a greenish tinge, spotted with reddish-brown.

2. **Eudocimus ruber.**

The Red Curlew, Catesby, Nat. Hist. Carol. i. p. 84, t. 84 [1].
Tantalus ruber, Linn. Syst. Nat. i. p. 241 [2].
Ibis rubra, Dresser, Ibis, 1866, p. 32 [3].
Guara rubra, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 67 [4].
Eudocimus ruber, Sharpe, Cat. Birds Brit. Mus. xxvi. p. 41 [5].

Scarlatinus, scapis remigum dimidiatim albis; primariis quatuor externis ad apicem purpurascenti-nigris; fronte basali, loris, regione faciali et gutture summo nudis carneo-rubris: rostro nigricanti-brunneo, ad basin carneo; pedibus carneis. Long. tota 23·0, alæ 9·8, caudæ 3·5, rostri 5·0, tarsi 3·9. (Descr. avis adulti ex Guiana. Mus. Brit.)

Juv. Brunneus, dorso postico, uropygio et supracaudalibus albis; remigibus brunneis, intus albicantibus; rectricibus brunneis, ad basin albis; pileo undique et gutture toto obscure albo striolatis, plumis albido marginatis; corpore reliquo subtus cum subalaribus et axillaribus albis.

Hab. North America, Florida, Louisiana, and Texas.—Mexico, ? Matamoros (*fide Dresser* [3]).—Guiana [5]; Venezuela; Amazonia [5]; Greater Antilles [5].

The Scarlet Ibis is said to have occurred in Texas, Louisiana, and Florida, but it is not included in the standard work on the Birds of North America of Messrs. Baird, Brewer, and Ridgway; and in the second edition of the 'Check-list' (1895) it is stated that the species has not been recently recorded from the United States. Mr. Dresser was assured that *E. ruber* had been seen at Matamoros, on the Rio Grande, during the winter months; but no specimens were procured, neither has there been any confirmation of the Mexican habitat during the thirty-six years which have elapsed since he wrote.

PLEGADIS.

Plegadis, Kaup, Natürl. Syst. p. 82 (1829); Sharpe, Cat. Birds Brit. Mus. xxvi. p. 29 (1898).

This genus is closely allied to the preceding, the members of which have the tarsus plated in front, and a similar short tail, but the head in *Plegadis* is completely feathered and the plumage metallic.

Three species are known: the Glossy Ibis (*P. falcinellus*), which is widely distributed over the Old World and occurs also in the Eastern United States; *P. guarauna*, ranging from the Southern United States over the greater part of the Neotropical Region and southward to Patagonia; and *P. ridgwayi*, of Peru and Bolivia.

1. Plegadis guarauna.

Scolopax guarauna, Linn. Syst. Nat. i. p. 242 [1].

Ibis guarauna, Wagler, Isis, 1831, p. 530 [2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 309 [3].

Plegadis guarauna, Baird, Brewer, & Ridgway, Water-Birds N. Amer. i. p. 97 [4]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 171 [5]; Stone, Pr. Acad. Philad. 1890, p. 217 [6]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [7]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 788 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 68 [9]; Sharpe, Cat. Birds Brit. Mus. xvi. p. 34 [10].

Ibis ordi, Scl. P. Z. S. 1864, p. 179 [11]; Sumichr. La Nat. v. p. 233 [12].

Falcinellus igneus (nec Gm.), Dugès, La Nat. i. p. 142 [13]; Scl. & Salv. Nomencl. Av. Neotr. p. 126 [14].

Plegadis autumnalis (nec Hasselq.), Herrera, La Nat. (2) i. pp. 187 [15], 328 [16].

Castaneo-rufus, viridi nitens; tectricibus alarum magis metallice violaceis, viridi vel bronzino nitentibus; primariis viridibus, secundariis æneo-bronzinis, his intimis extus cuprescenti-purpureis, intus viridibus; cauda viridi, purpureo et bronzino nitente; pileo cristato purpurascenti-cupreo; linea frontali alba, pone oculos ducta et ad basin mandibulæ extensa; facie laterali et corpore subtus toto castaneis; subcaudalibus partim viridibus, partim purpureis; subalaribus bronzinis, majoribus et remigibus infra viridibus cupreo et purpureo nitentibus: rostro fusco, vix rufescente; loris, area nuda faciali mentoque pallide coccineis; pedibus griseo-brunneis vel coccineis; iride coccinea. Long. tota circa 18·5, alæ 10·6, caudæ 3·7, culm. 5·3, tarsi 4·0. (Descr. maris adulti ex Brownsville, Texas. Mus. nostr.)

♀ mari similis, sed minor et rostro breviore. Long. tota circa 16·0, culm. 4·2. (Descr. feminæ adultæ ex Corpus Christi, Texas. Mus. nostr.)

Ptil. hiem. Brunneus, metallice purpureo, viridi et bronzino nitens; alis magis distincte metallice viridibus; pileo et collo gastræoque toto griseo-fuscis; capite undique et collo superiore albido minute striolatis; alis infra metallice viridibus. (Descr. maris adulti ex Presidio, Mexico. Mus. nostr.)

Juv. ptilosi hiemali similis; pileo et collo fuscis, illo albo striolato: notæo reliquo metallice olivaceo-viridi; gastræo fusco, gutture minute albido striato: rostro brevi (3·0). (Descr. av. juv. ex Buenos Ayres. Mus. nostr.)

Hab. North America, Western United States from Texas to California, Oregon, and casually to Southern British Columbia, Kansas, and Florida [9].—Mexico (*Wagler* [2], *Sumichrast* [12]), Cachuta, Sonora (*Robinette* [7]), Mazatlan (*Grayson* [3]), Manzanilla Bay (*Xantus* [3]), Presidio de Mazatlan (*Forrer* [10]), Guanajuato, Guadalajara (*Dugès* [13]), Valley of Mexico (*White* [10 11]), Lake of Xochimilco (*Herrera* [15 16]), Laguna de Epatlan, Puebla, Laguna del Rosario, Tlaxcala (*Ferrari-Perez* [5]), Lake Patzcuaro, Orizaba (*Baker* [6], *Jouy* [8]), Tampico, Presas, Soto La Marina, Tamaulipas, Tamiagua, Tuxpan, Pueblo Viejo (*Berlandier* [14]).—South America to Southern Brazil, Chile, and Patagonia [10]; Antilles [10], San Domingo [10]; Hawaiian Is. [10].

P. guarauna, which differs from the common Glossy Ibis in having a white frontal band, is an inhabitant of Western North America, and is very plentiful in Mexico, in all marshy places in the central tableland, and in the vicinity of small streams and lakes. So far as we know, it has not been recorded from any of the other countries of Central America; but it winters in Southern Brazil, Argentina, Chile, and Patagonia, and has been found in San Domingo, and even in the Sandwich Islands.

This Ibis is described as easy and graceful in its movements, and a bird of rapid flight. Its food consists of insects, small crustacea, &c. The nest is generally

built in reed-beds, being neatly made of dead rushes and supported by the growing plants. The birds build in communities, generally in the same districts as the Herons, but, as a rule, slightly apart from them. The eggs are three in number and of a deep bluish-green colour.

HARPIPRION.

Harpiprion, Wagler, Isis, 1832, p. 1232 ; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 25 (1898).

This genus belongs to that section of the Ibises which has the front of the tarsus reticulated and covered with hexagonal scales. The plumage is of a dark metallic hue, with the head densely feathered and having a slight crest of metallic-green plumes on the nape. The lores and chin are bare, as well as a line along the sides of the throat.

Only one representative of the genus is known, widely distributed throughout South America and reaching northward to the State of Panama.

1. Harpiprion cayennensis.

Courly vert de Cayenne, D'Aubent. Pl. Enl. viii. t. 820[1].

Tantalus cayennensis, Gm. Syst. Nat. i. p. 652[2].

Harpiprion cayennensis, Wagler, Isis, 1832, p. 1232[3]; Cass. Pr. Acad. Philad. 1860, p. 197[4]; Lawr. Ann. Lyc. N. Y. vii. p. 479[5]; Scl. & Salv. P. Z. S. 1864, p. 372[6]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 25[7].

Supra metallice bronzino-brunneus, olivaceo et viridi nitens; alis paullo viridioribus, tectricibus majoribus chalybeo nitentibus; remigibus chalybeo- vel purpureo-nigris, viridi et bronzino extus nitentibus; secundariis intimis dorso concoloribus; cauda saturate viridi, metallice purpureo nitente; pileo et facie laterali cum gutture toto sordide cinerascenti-brunneis; pileo postico, nucha, collo postico et laterali plumis lanceolatis metallice viridibus ornatis; corpore reliquo subtus nigricante, olivaceo-viridi adumbrato; subcaudalibus metallice viridibus; subalaribus pectore concoloribus; remigibus intus metallice chalybeo et viridi nitentibus: rostro et faciei area nuda virescenti-cinereis; pedibus pallidioribus, virescenti-cinereis; iride brunnea. Long. tota circa 20·5, alæ 11·2, caudæ 5·6, culm. 4·35, tarsi 2·3. (Descr. maris adulti ex Lion Hill, Panama. Mus. nostr.)

Hab. Panama, Lion Hill Station (*M'Leannan*[5 6 7]), River Nercua (*Wood*[4]).—South America, Colombia[7], Ecuador[7], Guiana[7], Brazil[7].

H. cayennensis is described as shy and suspicious in habit, frequenting streams and swamps in the forest districts of South America, where the bird gathers its prey, which consists largely of insects. It may often be seen during the day sitting on the branch of a tree, uttering a peculiar loud vibrating cry, taking flight towards evening.

We have no information with regard to the nest and eggs of this species.

Order PHŒNICOPTERI.

Fam. PHŒNICOPTERIDÆ.

The Flamingoes are easily recognized by their external appearance, which would at first sight suggest an affinity with the Herons and Storks; they have, however, a greater structural resemblance to the Anseres. But the peculiar form of the bill and other anatomical characters mark them as a separate group, and they are best placed as an intermediate Order between the Storks and the Ducks. There are three genera recognized by Count Salvadori, of which *Phœnicopterus* is found in both hemispheres, *Phœniconaias* in Africa and India, while *Phœnicoparrus* is confined to South America.

PHŒNICOPTERUS.

Phœnicopterus, Linn. Syst. Nat. i. p. 230 (1766); Salvad. Cat. Birds Brit. Mus. xxvii. p. 9 (1895).

The characters of the genus may be briefly summed up as equivalent to those of the family. One species only is found within our limits.

1. Phœnicopterus ruber.

Phœnicopterus ruber, Bonn. Enc. Méth. i. p. 162 [1]; Boucard, P. Z. S. 1883, p. 458 [2]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 415 [3]; Stone, Pr. Acad. Philad. 1890, p. 203 [4]; A. O. U. Check-l. N. Amer Birds, 2nd ed. p. 66 [5]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 9 [6].

Scarlatino- vel miniato-ruber, alis et hypochondriis lætioribus magis coccineis, remigibus nigris: rostro aurantiaco, ad basin pallide flavo; loris nudis flavis; pedibus coccineis; iride cyanea. Long. tota circa 43·0, alæ 15·5, caudæ 6·0, culm. 5·2, tarsi 13·0. (Descr. maris adulti ex Inagua, Bahamas. Mus. nostr.)

Hab. North America, Southern Florida [3 5].—Mexico, Rio Lagartos, Yucatan (*Gaumer* [2]), coast of Yucatan (*Stone & Baker* [4]), Northern Yucatan (*Devis* [6]).—South America to the Galapagos Is. and Pará [6]; Bahama Is.

The Rosy Flamingo occurs in large flocks in Southern Florida, and has been observed in Yucatan and in the Bahama Islands. The nest is made of mud, slightly raised above the level of the water. The eggs are chalky white, two in number, and of a peculiar elongated form.

Order ANSERES*.

This Order, which includes the Swans, Geese, and Ducks, is such a natural one that very few remarks are necessary to emphasize its characters. All its members have a desmognathous palate, the maxillo-palatines completely coalescing along the middle line. There are also other osteological features of the skull which separate the Anseres from the Steganopodes and Herodiones, but the external characters of the Ducks and their allies are sufficiently well known to render a more exact description unnecessary in the present work.

Count Salvadori, who has monographed the Anseres in the twenty-seventh volume of the 'Catalogue of Birds,' recognizes but one family, Anatidæ, with no less than eleven subfamilies, six of which are represented in Central America.

Fam. ANATIDÆ.

In the preceding paragraph we have mentioned the chief feature which characterizes this family.

The habits of the ordinary species of Ducks are so very similar that we have contented ourselves with a few remarks on the life-histories of the Anatidæ, chiefly derived from the 'Water-Birds of North America' of Messrs. Baird, Brewer, and Ridgway.

N.B.—*Chauna derbyana*, a South-American species, has been erroneously recorded from Belize by Sclater and Salvin (Ibis, 1860, p. 402).

Subfam. *PLECTROPTERINÆ*.

This subfamily takes its name from the principal genus *Plectropterus* of Africa, which contains the Spur-winged Geese peculiar to that continent. According to Count Salvadori, the Plectropterinæ may be distinguished by the hind toe being rather long and not lobed, the feet palmated; the tail-feathers also rather long, broad, and rounded at the tip; and the upper plumage for the most part glossy. Three genera only are represented in the Neotropical Region, of which two occur within our limits.

CAIRINA.

Cairina, Fleming, Phil. Zool. ii. p. 260 (1822); Salvad. Cat. Birds Brit. Mus. xxvii. p. 51 (1895).

The well-known Muscovy Duck is the single representative of the genus *Cairina*. It is easily distinguished by the bare lores and the caruncles on the forehead and at

* I have to acknowledge the assistance of Mr. Ogilvie-Grant in the preparation of the MSS. of this portion of the 'Biologia.'—F. D. G.

the base of the bill in the male bird, these caruncles being absent in the female. There are no spurs on the wing, and the sexes are similarly coloured.

Only one species is known, distributed over the greater portion of the Neotropical Region, and occurring throughout Central America, but not extending into the United States.

1. Cairina moschata.

Anas moschata, Linn. Syst. Nat. i. p. 199[1].

Cairina moschata, Moore, P. Z. S. 1859, p. 65[2]; Scl. & Salv. Ibis, 1859, p. 232[3]; P. Z. S. 1864, p. 373[4]; 1876, p. 378[5]; Lawr. Ann. Lyc. N. Y. viii. p. 13[6]; Mem. Bost. Soc. N. H. ii. p. 315[7]; Bull. U. S. Nat. Mus. no. 4, p. 50[8]; Taylor, Ibis, 1860, p. 315[9]; Salv. Ibis, 1865, p. 198[10]; 1889, p. 377[11]; 1890, p. 89[12]; Frantz. J. f. Orn. 1869, p. 378[13]; Sumichr. La Nat. v. p. 234[14]; Nutting, Pr. U. S. Nat. Mus. v. p. 408[15]; vi. p. 390[16]; Richm. Pr. U. S. Nat. Mus. xvi. p. 531[17]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 51[18]; Underwood, Ibis, 1896, p. 451[19]; Salvad. & Festa, Boll. Mus. Zool. Torino, xiv. no. 339, p. 13[20].

Pileo cum collo et corpore subtus brunnescenti-nigris; cervice postica ima et dorso saturate viridibus, plumis singulis nigro marginatis; scapularibus cum supracaudalibus rectricibusque saturate nitenti-viridibus; tectricibus alarum albis; remigibus nigris, secundariis metallice viridibus, nitore cyaneo adumbratis; corporis lateribus nigris, viridi lavatis; subalaribus et axillaribus pure albis: rostro rubescenti-albo, nigro variegato; carunculis coccineis; pedibus nigris; iride brunnescenti-flava. Long. tota circa 29·0, alæ 14·5, caudæ 7·5, culm. 2·5, tarsi 2·3. (Descr. exempl. ex Huamachal. Mus. nostr.)

♀ mari similis, sed minor, et carunculis faciei absentibus distinguenda. (Descr. exempl. ex Huamachal. Mus. nostr.)

Juv. ptilosi sordidiore et tectricibus alarum brunnescenti-nigris distinguenda.

Hab. Mexico, Mazatlan (*Grayson*[7]), Presidio (*Forrer*[18]), Rio Zacatula (*Xantus*[7]), both coasts[14], Tapana[8], Santa Efigenia[8] (*Sumichrast*), Cozumel I. (*Gaumer*[11 12]); British Honduras, Belize (*O. S.*[3]); Guatemala, Lake of Peten (*Leyland*[2]), Huamachal[10], Chiapam[10], Santana Mixtan[3] (*O. S.*); Honduras, Chimalacon and Aloor Rivers (*Leyland*[2]), Lake of Yojoa (*Taylor*[9]); Nicaragua, Sucuyá (*Nutting*[16]), Rio Escondido (*Richmond*[17]); Costa Rica, Miravalles (*Underwood*[19]), La Palma, Gulf of Nicoya (*Nutting*[15]), Guanacaste (*v. Frantzius*[13]); Panama (*M'Leannan*[4 6]), Laguna de Pita (*Festa*[20]).—South America generally[18].

The Muscovy Duck, well known in a domestic state in nearly all parts of the globe, is a native of the tropical regions of the New World and is found abundantly on both coasts of Central America. It usually frequents low swampy districts, and is often plentiful on rivers bordered by extensive forests. During the day the birds remain in the swamps, but towards evening they congregate on the lower boughs of the trees on the margin of a clearing, where, at a distance, they look not unlike a flock of Black Vultures (*Catharista atrata*).

C. moschata is usually met with either in pairs or singly, but sometimes in flocks of twenty or thirty. It always roosts in trees, resorting to the same place night after night. The bird is said to breed in December, and the nest, in which from ten to

fourteen eggs are deposited, is made in a hole or fork of a large tree at some height from the ground. The species usually seeks its food in the rivers, but on moonlight nights individuals may be seen in the maize-fields or amongst the mandioca-plots, of which they devour the roots. Though shy and by no means easy of approach, two or three birds may often be obtained between sundown and dark, by hiding amongst the trees and shooting them as they fly round overhead. All the domestic varieties of Ducks in Central America seem to have derived their origin from this species [3].

ÆX.

Aix, Boie, Isis, 1828, p. 329.

Æx, Wharton, B. O. U. List Brit. Birds, p. 123 (1883); Salvad. Cat. Birds Brit. Mus. xxvii. p. 72 (1895).

The Summer-Duck of North America and the Mandarin Duck of China constitute the sole members of the genus *Æx*. In placing it here we follow Count Salvadori's arrangement—in this instance not without some hesitation, as we fail to see any relationship to *Cairina*.

The extraordinary ornamental plumage of the wing, so unlike that of any other Duck, suggests that the genus *Æx* may be placed as the representative of a distinct subfamily. The two species of the genus are distinguished by the peculiar colouring of the primaries, which have the terminal portion of the outer webs silvery-grey, of the inner webs metallic green, this system of coloration being common to both sexes. The lower portion of the tarsus is covered in front with a row of transverse scutellæ, and the axillaries and under wing-coverts are never black.

1. Æx sponsa.

Anas sponsa, Linn. Syst. Nat. i. p. 207 [1].

Aix sponsa, Lawr. Mem. Bost. Soc. N. H. ii. p. 315 [2]; Scl. & Salv. P. Z. S. 1876, p. 397 [3]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 11 [4]; Herrera, La Nat. (2) i. pp. 187 [5], 329 [6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 52 [7]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 73 [8].

Capite saturate nitenti-viridi, genis purpurascentibus; crista pendente occipitali nitenti-viridi, postice purpurea, supra et infra lineis duabus albis marginata; collo laterali summo plaga lata æneo-nigra ornato; gutture et præpectore summo, cum genis et colli lateribus albis; notæo reliquo et cauda saturate æneo-viridibus; primariis brunnescenti-nigris, pogonio externo apicem versus cano, pogonio interno eodem modo metallice viridi; secundariis, scapularibus et tectricibus alarum majoribus nigris vel cyanescentibus vel purpurascenti-viridi variis, secundariis albo marginatis; præpectore et pectore superiore purpurascenti-castaneis, hujus plumis singulis macula triquetra alba terminatis; pectore laterali fascia alba nigraque ornato; pectore imo et abdomine albis; corporis lateribus et hypochondriis arenaceo-brunneis minute nigro fasciatis, plumis longioribus fasciis albis et nigris terminatis; hypochondriis imis purpurascenti-castaneis; subcaudalibus brunneis; axillaribus et subalaribus albis, nigro fasciatis: rostro variegato, culminis plaga longitudinali et ungue nigris; area oblonga a naribus usque ad unguem lactescenti-alba, basin versus purpurascenti-rubro; pedibus sordide flavis, palmis fuscescentibus; iride aurantiaco-rubra; palpebris miniatis. Long. tota circa 19·0, alæ 9·0–9·5, caudæ 5·0, culm. 1·4, tarsi 1·4. (Descr. maris adulti ex Quantico, Virginia. Mus. nostr.)

♀. Capite colloque griseis, pileo et crista paullulum viridi-æneo nitentibus; mento et gula albis; notæo reliquo æneo-brunneo, scapularibus et secundariis purpurascente nitentibus, alis aliter sicut in mari coloratis; corpore subtus albo, præpectore, pectore summo, corporis lateribus et hypochondriis brunneis, plumis arenario medialiter maculatis: rostro saturate plumbeo, ungue et culminis macula longitudinali nigris; pedibus flavescenti-brunneis. Long. tota circa 17·5, alæ 8·5, caudæ 4·5, culm. 1·3, tarsi 1·35. (Descr. feminæ adultæ ex New Haven, Connecticut. Mus. nostr.)

Hab. TEMPERATE NORTH AMERICA, breeding throughout its range [7].—MEXICO, Mazatlan (*Abert* [2]), Valley of Mexico (*Herrera* [5 6]).—GREATER ANTILLES, Cuba [8], Jamaica [8]; BERMUDA IS. [8].

The "Wood"-Duck, or "Summer"-Duck, is the most beautiful of all the American Anatidæ, and is found over the greater portion of North America, but is reported rare north of lat. 50° N. The species is remarkable for the way in which it frequents and traverses woods, flying swiftly and with ease amidst the trees, but scarcely ever uttering any note or cry. It chooses a cavity in a hollow tree or broken branch in which to deposit its eggs, and the same nesting-place is occupied for several years in succession. A female Wood-Duck was observed by Wilson to transfer all her brood of thirteen ducklings to the ground within the space of ten minutes, carrying them by the wing or the back of the neck and afterwards conducting the whole of her little family to the water.

The eggs are sometimes as many as 18 in number [4].

Subfam. *ANSERINÆ.*

The Geese belong to a subfamily very closely allied to the Plectropterinæ. They have no lobe to the hind toe, the latter being of moderate length; the tail-feathers are rather short, the upper parts not glossy; the wings without any metallic speculum; and the bill is rather thick and high at the base (*Salvadori*). Representatives of three genera of Geese have occurred within our limits.

CHEN.

Chen, Boie, Isis, 1822, p. 563; Salvad. Cat. Birds Brit. Mus. xxvii. p. 82 (1895).

The Snow-Geese representing the genus *Chen* are are inhabitants of North America, and one of them, *C. hyperboreus*, is also met with in North-eastern Asia. They have the lores densely feathered, and are distinguished by the stoutness of the bill, the depth of which at the base is equal to more than half the length of the culmen, while the serrations on the cutting-edge of the upper mandible are visible from the outside; this latter character they share with the true Geese of the genus *Anser*. The plumage of the adults is either white or bluish, with black primaries.

Three species are known, and perhaps four will be found to be worthy of distinction.

1. Chen hyperboreus.

Anser hyperboreus, Pall. Spic. Zool. vi. p. 25 [1]; Dugès, La Nat. i. p. 143 [2]; Sumichr. La Nat. v. p. 234 [3].

Chen hyperboreus, Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 439 [4]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 84 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 60 [6].

Pure albus, pileo interdum ferrugineo tincto; ala spuria et tectricibus primariorum cineraceis; primariis nigris, basin versus cinerascentibus: rostro purpurascenti-rubro, culminis ungue albo, margine tomiali nigro; pedibus purpurascentibus vel aurantiacis; iride saturate brunnea. Long. tota circa 28·0, alæ 17·0, caudæ 6·3, culm. 2·3, tarsi 3·25. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

♀ mari similis, sed minor. Long. tota circa 23·0, alæ 14·5, caudæ 6·3, culm. 1·95, tarsi 2·8.

Juv. Supra brunnescenti-griseus, notæi plumis albido limbatis; tectricibus alarum, secundariis externis rectricibusque latius marginatis; uropygio, supracaudalibus et corpore subtus toto pure albis: rostro nigricante; pedibus plumbeis; iride brunnea.

Hab. North America, Greenland [4]; Pacific coast to the Mississippi Valley, breeding in Alaska; south in winter to Southern Illinois and Southern California; casually to New England [6].—Mexico, Guanajuato (*Dugès* [2]), savannas of the Pacific coast (*Sumichrast* [3]).—N.E. Asia [5]; Northern Europe, accidental [5].

C. hyperboreus breeds in the Tundra or Barren Grounds of Arctic America, arriving in its northern habitat in the spring, at first in small parties, but afterwards in such amazing numbers that the marshes, at a little distance off, occasionally appear to be covered with snow, owing to the white plumage of these birds. In winter it is found on the lakes of the interior, and occurs in enormous numbers off the coast of California, whence the species extends into Western Mexico.

The Snow-Goose migrates along both coasts of North America, and is abundant off the mouth of the Mississippi and on the muddy and grassy shores of the Gulf of Mexico, the flocks of old and young birds generally keeping separate, according to Audubon, the immature individuals being recognizable by their grey plumage. *C. hyperboreus* is said to be a more silent species than the other migratory Geese, rarely emitting any cry, except when pursued or wounded.

The nest consists of a hole in the sand, well lined with down. The eggs are of a uniform dirty or yellowish-white colour.

ANSER.

Anser, Briss. Orn. vi. p. 261 (1760); Salvad. Cat. Birds Brit. Mus. xxvii. p. 88 (1895).

As in the genus *Chen*, the serrations on the cutting-edge of the upper mandible of the species of *Anser* are visible from outside, and the tomium is decidedly sinuate or concave; but the bill is weaker and more depressed, its depth at the base being less than half the length of the culmen. The plumage of the adult is never entirely white. The only true Goose which occurs within our limits is the large white-fronted *A. gambeli*.

1. Anser gambeli.

Anser albifrons (nec Scop.), Wagl. Isis, 1831, p. 531 [1].

Anser gambeli, Hartl. Rev. et Mag. Zool. 1852, p. 7 [2]; Dugès, La Nat. i. p. 143 [3]; Lawr. Mem. Bost. Soc. N. H. ii. p. 313 [4]; Sumichr. La Nat. v. p. 233 [5]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 95 [6].

Anser albifrons gambeli, Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 448 [7]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 61 [8]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 171 [9]; Herrera, La Nat. (2) i. pp. 187 [10], 329 [11].

Supra brunnescens, fronte et plumis ad basin mandibulæ albis; tectricibus alarum pallidiore brunneo marginatis, majoribus externe albis, fasciam conspicuam formantibus; remigibus nigris, primariis griseo lavatis; supracaudalibus albis; rectricibus brunnescenti-nigris, albo terminatis; gutture brunnescente, pileo concolore; corpore reliquo subtus brunnescenti-albo, pectore et abdomine fasciis et maculis nigris irregulariter notatis; hypochondriis brunneis, plumis pallidiore brunneo marginatis: rostro lactescenti-albo, mandibula plerumque et culminis basi flavis; pedibus flavis. Long. tota circa 29·0, alæ 16·0, caudæ 6·0, culm. 2·3, tarsi 2·5. (Descr. maris adulti ex St. Michael's, Alaska. Mus. nostr.)

♀ mari similis, sed paullo minor.

Juv. adultis similis, sed saturatior et magis concolor; maculis nigris pectoralibus nullis.

Hab. North America, rare on the Atlantic coast, breeding far to the northward, in winter south to Cape San Lucas [8].—Mexico (*Wagler* [1]), Mazatlan (*Grayson* [4]), Guanajuato (*Dugès* [3]), Valley of Mexico (*Herrera* [10 11]), savannas of Nopalapam, Vera Cruz, and Santa Maria del Mar, Tehuantepec (*Sumichrast* [5]), San Marcos, Puebla (*Ferrari-Perez* [9]).—Cuba [5]; Coast of Eastern Asia, Japan [6].

This Goose differs from the European *A. albifrons* only in its larger size. It breeds in great numbers in Arctic America and on the islands of the Polar Sea, passing north, in large flocks, at the same time as the Snow-Goose. The species goes south in autumn and ranges as far as Mexico, where it is a regular winter visitant. According to Grayson, *A. gambeli* appears in considerable numbers at Mazatlan from September to February, and the bird occurs on both coasts, as Sumichrast speaks of large flocks in Tehuantepec and Vera Cruz. Ferrari-Perez records it from San Marcos in the State of Puebla, and Herrera from the Valley of Mexico, where its native name is "Tlalacatl."

The habits of this bird do not differ from those of other northern Geese, but it seems occasionally to make a more substantial nest than some of its allies—a depression in the ground being well lined with hay, down, and feathers. In Alaska, however, Mr. Dall found the eggs laid in a hollow in the sand without any lining whatever. The eggs vary from six to ten in number, and are indistinguishable from those of the Snow-Goose.

BRANTA.

Branta, Scop. Hist. Nat. Ann. i. p. 67 (1769); Salvad. Cat. Birds Brit. Mus. xxvii. p. 111 (1895).

The serrations on the edge of the upper mandible in this genus are not visible from outside, as in *Chen* and *Anser*, and the tomium is almost straight. Count Salvadori

admits six species, five of which are found in North America, but only one has been met with within our limits.

1. Branta canadensis.

The Canada Goose, Catesby, Nat. Hist. Carol. i. p. 92, t. 92 [1].

Anas canadensis, Linn. Syst. Nat. i. p. 198 [2].

Bernicla canadensis, Dugès, La Nat. i. p. 143 [3].

Bernicla canadensis, var. *occidentalis,* Lawr. Mem. Bost. Soc. N. H. ii. p. 313 [4]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 455 [5].

Branta canadensis, Salvad. Cat. Birds Brit. Mus. xxvii. p. 112 [6]; A. O. U. Check-l. N. Amer. Birds, p. 62 [7].

Pileo colloque nigris, hoc basin versus albo; gutture et plaga genas transeunte et ad regionem paroticam posticam extensa albis; dorso brunneo; uropygio nigro; supracaudalibus albis; primariis nigris, tectricibus alarum et secundariis brunneis, pallidiore brunneo marginatis; rectricibus nigris; pectore et abdomine summo albicanti-brunneis, abdomine imo et subcaudalibus albis: rostro nigro; pedibus saturate plumbeis, fere nigris; iride saturate brunnea. Long. tota circa 40·0, alæ 21·0, culm. 2·7, tarsi 3·7. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

♀ mari similis, sed minor. Long. tota 30·0, alæ 15·0, culm. 1·55, tarsi 2·25.

Juv. Multo minor, et plumis albis facialibus nigro marginatis.

Hab. Temperate North America, breeding in the Northern United States and British Provinces, south in winter [7].—Mexico, Durango (*Grayson* [4]), Guanajuato, Guadalajara (*Dugès* [3]).

The Canada Goose has a very extended range in North America, breeding in the Arctic regions and as far south as 42° N. lat. It is abundant on all the waters of the interior. Four forms of *B. canadensis* have been recognized by American ornithologists, but Count Salvadori does not consider them to be distinct.

The typical form appears to be the one which occurs in Mexico, where the Canada Goose has been recorded by Dugès from Guanajuato and Guadalajara, and by Grayson from Durango. The latter met with it on the road between the Sierra Madre Mountains and the city of Durango in the months of February and March, but he never saw or heard of one west of the Cordilleras in that locality.

B. canadensis is the earliest to arrive at its breeding-quarters in Arctic America, where it nests on the plains and in the marshes. Though very tame at this season, it becomes more wary afterwards, and is then difficult of approach. When the young have not yet gained their full plumage, and the old birds are shedding their quills, and both are thus unable to fly, they are slaughtered in large numbers.

The nest is generally on the ground, and consists of dead sticks and moss lined with down; but occasionally the eggs are laid in the old nest of a Hawk, or other large bird, in a tree. The eggs are ivory-white, and six to nine in number.

Subfam. *ANATINÆ.*

This subfamily comprises most of the Ducks, including the Tree-Ducks (*Dendrocycna*), the Sheld-Ducks (*Tadorna* and *Casarca*), the typical Ducks (*Anas*), and several other well-known forms, such as the Wigeon (*Mareca*), the Teal (*Nettium*), &c. All these birds have the hind toe very narrowly lobed, and usually show a metallic speculum on the wings, according to Count Salvadori, who also states that the males have a *bulla ossea* on the larynx.

Nearly every genus belonging to this subfamily is represented within the Central-American area, which is visited by numerous migrants from the high north after the breeding-season. Few of the species appear to be resident.

DENDROCYCNA.

Dendrocygna, Swains. Class. Birds, ii. p. 365 (1837).

Dendrocycna, Scl. P. Z. S. 1880, p. 508 (nomen emend.); Salvad. Cat. Birds Brit. Mus. xxvii. p. 144 (1896); Oates, Man. Game-Birds Brit. Ind. ii. p. 110 (1899).

The Whistling-Ducks (*Dendrocycna*) differ from all other genera of the Anatinæ in having the tarsus rather elongated, and its lower portion covered in front with small reticulate scales in place of the row of transverse scutellæ. The general tint of the plumage is rufous, and the primary-quills, axillaries, and under wing-coverts are black.

The sexes are similar in plumage and do not differ much in size. The only moult takes place in autumn. Of the nine known species of the genus, five occur in America, but only two are found within our limits.

1. **Dendrocycna fulva.**

Anas fulva, Gmel. Syst. Nat. i. p. 530[1]; Wagl. Isis, 1831, p. 532[2].

Dendrocygna fulva, Lawr. Mem. Bost. Soc. N. H. ii. p. 313[3]; Scl. & Salv. P. Z. S. 1876, p. 372[4]; Herrera, La Nat. (2) i. pp. 187[5], 329[6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 64[7].

Dendrocycna fulva, Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 484[8]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 149[9].

Supra brunnescenti-nigra, plumis dorsalibus et scapularibus cinnamomeo late marginatis; tectricibus alarum minoribus castaneis; remigibus, cum axillaribus et subalaribus, nigris; supracaudalibus albicanti-fulvis; pileo rufescenti-brunneo; capite et collo reliquo rufescenti-cinnamomeis; corpore reliquo subtus pallide castaneo, hypochondriis longioribus fascia longitudinali flavescenti-alba, fusco marginata, ornatis; fascia nigra ab occipite per collum posticum producta; collo medio albo, fusco striolato; subcaudalibus albescenti-fulvis: rostro et pedibus saturate plumbeis; iride brunnea. Long. tota circa 20·0, alæ 9·0, caudæ 2·3, culm. 1·95, tarsi 2·4. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

♀ mari similis. Long. tota circa 20·0, alæ 8·1, culm. 1·65, tarsi 2·1.

Juv. adultis similis, sed subtus pallidior, supracaudalibus anguste brunneo marginatis; tectricibus alarum vix castaneis.

Hab. North America, southern border of the United States (Louisiana, Texas, Nevada, California), casual in North Carolina and Missouri [7].—Mexico (*Wagler* [2]), Mayo and Yaqui Rivers, Sonora, Mazatlan, Sinaloa, San Blas, Tepic (*Grayson* [3]), El Salto, San Luis Potosi (*Richardson* [9]), city of Mexico (*mus. nostr.* [9]), Valley of Mexico (*Herrera* [6 7]).—South America, Venezuela [9], Peru [9], Argentine Republic [9]; Tropical Africa and Madagascar [9]; Indian Peninsula and Burmese Provinces [9].

The Fulvous Tree-Duck, so named from its habit of settling in trees, is found in the Southern United States, where it is one of the latest birds to breed. It also nests in Sinaloa and Sonora, according to Grayson, who believed that two or more broods were reared in a season, as in November, near San Blas, he found young birds unable to fly. The species arrives in the Mazatlan district in October, and has been noticed passing over that place on its northern migration in April.

In Mexico *D. fulva* is entirely a freshwater Duck, inhabiting the "tierra caliente" near the sea-coast, but is never met with on the sea, and very seldom on the esteros or salt-water lagoons.

This Duck is very active and equally at home on the water or on the banks of streams; on land, when wounded, it is often able to escape the hunter by running and hiding in the grass and bushes, while on the water the bird saves itself by diving when closely pursued. The food consists chiefly of the seeds of grasses and weeds, though it is frequently supplemented by grain obtained in the corn-fields.

Grayson was informed by the natives that the nest was placed on the ground; but this was doubtless a mistake, as in other parts of this Tree-Duck's range it is built of sticks and grass, either on a branch or in the hollow of a tree, like those of other species of *Dendrocycna*. The eggs are white.

2. Dendrocycna autumnalis.

Anas autumnalis, Linn. Syst. Nat. i. p. 205 [1].

Dendrocygna autumnalis, Scl. P. Z. S. 1858, p. 360 [2]; Scl. & Salv. Ibis, 1859, p. 231 [3]; P. Z. S. 1864, p. 372 [4]; 1876, p. 373 [5]; Salv. Ibis, 1865, p. 193 [6]; 1889, p. 377 [7]; 1890, p. 89 [8]; Cat. Strickl. Coll. p. 530 [9]; Cassin, Pr. Ac. Philad. 1860, p. 197 [10]; Lawr. Ann. Lyc. N. York, viii. p. 13 [11]; Mem. Bost. Soc. Nat. Hist. ii. p. 313 [12]; Bull. U. S. Nat. Mus. no. 4, p. 50 [13]; v. Frantz. J. f. Orn. 1869, p. 379 [14]; Boucard, P. Z. S. 1878, p. 44 [15]; Sumichr. La Nat. v. p. 234 [16]; Richm. Pr. U. S. Nat. Mus. xvi. p. 531 [17]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 64 [18]; Underw. Ibis, 1896, p. 450 [19].

Dendrocycna autumnalis, Nutting, Pr. U. S. Nat. Mus. v. p. 408 [20]; vi. pp. 380 [21], 390 [22]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 481 [23]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 159 [24]; Festa, Boll. Mus. Zool. Torino, xiv. no. 339, p. 13 [25].

Supra castanea; tectricibus alarum minoribus flavescenti-olivaceis, medianis cineraceis, majoribus et tectricibus primariorum grisescenti-albis; remigibus nigris, basin versus albis; rectricibus nigris; pileo rufescenti-brunneo, antice pallidiore, nucham versus nigricante; collo postico longitudinaliter nigro; capitis lateribus et collo summo grisescenti-fulvis; collo reliquo castaneo, dorso concolore; uropygio et supracaudalibus,

cum abdomine, hypochondriis, axillaribus et subalaribus nigris; crisso albo, nigro maculato: rostro corallino, culmine aurantiaco, ungue apicali cærulescente; pedibus roseo-albis; iride brunnea. Long. tota circa 19·0, alæ 9·7, caudæ 3·0, culm. 2·2, tarsi 2·6. (Descr. maris adulti ex Jalapa. Mus. nostr.)

♀ mari similis, sed paullo minor. Long. tota circa 19·0, alæ 2·2, caudæ 3·0, culm. 1·9, tarsi 2·25. (Descr. feminæ adultæ ex Tampico. Mus. nostr.)

Juv. adultis similis, sed sordidius colorata, sordide cinerascens ferrugineo tincta, nec rufescenti-brunnea; abdomine et hypochondriis cinerascenti-albis, fusco transfasciatis: rostro et pedibus fuscis.

Hab. North America, south-western border of the United States [18].—Mexico, both coasts [16], Tapana [13] (*Sumichrast*), Presidio de Mazatlan (*Forrer* [24]), Mazatlan (*Grayson*, *Bischoff* [12]), Tamaulipas (*Richardson* [24], *Berlandier* [23]), Jalapa (*Ferrari-Perez* [24]), Vega del Casadero, Vera Cruz (*Trujillo* [24]), Cozumel I. (*Gaumer* [7 8]); Guatemala (*Constancia* [9]), Acapam [6], Huamachal [24] (*O. S.*); Honduras [5], Lake of Yojoa (*Taylor* [2 3]); Nicaragua, Sucuyá [22], San Juan del Sur [21] (*Nutting*); Costa Rica [5], Guanacaste (*v. Frantzius* [14]), Cartago (*Boucard* [15]), Rio Frio, Rio Escondido (*Richmond* [17]), between Bebedero and Miravalles (*Underwood* [19]), La Palma (*Nutting* [20]), Nicoya (*Arcé* [24]); Panama (*M'Leannan* [4 5 11], *Festa* [25]), Lion Hill (*M'Leannan* [24]), Agua Dulce (*mus. nostr.* [24]).—Colombia, Rio Truando (*Wood* [10]); West Indies [23].

This species is larger than *D. fulva*, and is distinguished by the black spots on the vent; the chestnut mantle is also a recognizable character. It has a wider distribution in Central America than the Fulvous Tree-Duck, occurring from the Rio Grande Valley in Texas throughout Central America from Mexico to Panama, and breeding at Mazatlan [12], where it is found throughout the year, and also at Tamaulipas [23].

Grayson has given a good account of *D. autumnalis* as observed by him in Western Mexico. He says that the Black-bellied Tree-Duck resembles *D. fulva*, but is more nocturnal in its habits, visiting the corn-fields during the night in great numbers. This Duck not only perches on trees, but also on the corn-stalks when feeding on the grain. Their peculiar whistle of "Pe-che-che-né" has gained for them the name of "Whistling-Duck." In confinement they become very tame, and are as useful as a watch-dog, uttering their shrill cry at night on the slightest alarm.

In the winter season it is usually found in large numbers together, and we noticed several flocks on the Pacific coast of Guatemala, and at least a thousand were seen by Mr. Richmond on a flooded piece of land near the Rio Frio in Costa Rica [17]. A nestling from Agua Dulce in our collection shows that the species breeds in the State of Panama.

The nest is built in the hollow of a large tree, and from twelve to fifteen eggs are laid, according to Grayson, who also states that the young are brought to the ground, one at a time, in the mouth of the female bird, and, after being safely deposited, are cautiously led by her to the nearest water.

ANAS.

Anas, Linn. Syst. Nat. i. p. 134 (1766) ; Salvad. Cat. Birds Brit. Mus. xxvii. p. 187 (1895).

This genus includes the typical Ducks, which have the outer web of the primaries blackish, the inner one drab with a blackish tip (*cf.* Oates, 'Manual of the Game-Birds of India,' ii. p. 21). The bill is broad and of the same width throughout, and equals the head in length; the lamellæ are scarcely exposed. The sexes differ markedly in colour, and the upper wing-coverts are never blue. The wing is similarly coloured, and has a brilliant speculum, in both male and female.

Sixteen species of *Anas* are known, of which three are found in Central America.

1. **Anas boscas.**

Anas boschas, Linn. Syst. Nat. i. p. 205 [1]; Licht. Preis-Verz. Mex. Vög. p. iii, no. 157 [2]; Cab. J. f. Orn. 1863, p. 59 [3]; Wagl. Isis, 1831, p. 532 [4]; Lawr. Ann. Lyc. N. York, viii. p. 13 [5]; Mem. Bost. Soc. Nat. Hist. ii. p. 314 [6]; Dugès, La Nat. i. p. 143 [7]; Scl. & Salv. P. Z. S. 1876, p. 380 [8]; Sumichr. La Nat. v. p. 234 [9]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 491 [10]; Ridgw. Pr. U. S. Nat. Mus. ix. p. 173 [11]; Herrera, La Nat. (2) i. pp. 187 [12], 328 [13]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 48 [14].

Anas boscas, Salvad. Cat. Birds Brit. Mus. xxvii. p. 189 [15].

Anas maxima, Scl. P. Z. S. 1859, p. 369 [16].

Capite et collo superiore læte nitenti-viridibus, hoc torque albo interrupto ornato; interscapulio et scapularibus griseis, brunneo tinctis et minute vermiculatis; dorso medio saturate brunneo; uropygio et supracaudalibus nigris; alis cinerascenti-brunneis, speculo alari secundariorum purpurascenti-cyaneo metallice nitente, fascia subterminali alba ante apicem nigrum; tectricibus alarum majoribus et secundariis griseis, albo nigroque fasciatim terminatis; secundariis intimis extus partim læte brunneis; rectricibus griseis albo marginatis, pennis 4 medianis recurvatis nigris; gutture nitenti-viridi, pectore summo saturate castaneo, corpore reliquo subtus grisescenti-albo, fasciis angustissimis saturate brunneis vermiculatim transfasciatis; subcaudalibus nigris; subalaribus et axillaribus albis: rostro flavescenti-olivaceo, apicem versus nigro, mandibula ad basin rufescenti-flava; pedibus aurantiacis; iride brunnea. Long. tota circa 24·0, alæ 10·5–11·5, caudæ 4·4, culm. 2·2, tarsi 1·85. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

♀. Supra saturate brunnea, plumis singulis brunnescenti-fulvo marginatis; corpore subtus fulvo, saturate brunneo striolatim maculato; mento, gutture et præpectore fulvescentibus concoloribus; ala fere ut in mari colorata. (Descr. feminæ adultæ ex Corpus Christi. Mus. nostr.)

Juv. feminæ similis. *Mas junior* pectoris plumis saturatius indicatis distinguenda.

♂ *ad. in ptilosi vera æstiva* feminæ adultæ similis, sed pileo nigricante, et fascia sordida oculum transeunte.

Hab. North America, breeding southward to the Southern United States; less common in the East [14].—Mexico (*Deppe & Schiede* [2 3], *Wagler* [4]), Hermosillo, Sonora (*Ferrari-Perez* [14]), Rio San Pedro, Rio Janos, Rio Conalitos (*Kennerly* [10]), Mazatlan (*Grayson* [6]), Guanajuato, Guadalajara (*Dugès* [7]), Valley of Mexico (*Herrera* [12 13], *Sumichrast* [9]), Jalapa (*de Oca* [8 16]); Panama (*M'Leannan* [8]).—West Indies [15].—Europe and Northern Asia, rarely north of the Arctic Circle, in winter to Northern and North-eastern Africa; Northern India; China and Japan [15].

The Mallard is found throughout the northern regions of both hemispheres, and in the winter season visits more southern latitudes.

It is found more often on inland waters than on the sea-coast, its food consisting largely of grass-seeds, rice, roots of plants, &c., as well as worms, small shell-fish, and insects. The nest is made of grasses, and generally placed on the ground not far from water, though occasionally the bird will build in a tree. The eggs are from six to eight in number, of a greenish-white colour.

2. **Anas diazi.**

Anas diazi, Ridgw. Auk, 1886, p. 332[1]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 171[2]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 204[3].

Supra brunnescenti-nigra, plumis singulis saturate fulvo marginatis; pileo plumis nigricantibus, arenario anguste marginatis; fascia fusca oculum transeunte; genis cum capitis lateribus colloque arenariis, nigro anguste striolatis; loris, mento et gutture albicanti-fulvis concoloribus; corpore subtus reliquo brunnescenti nigro, plumis singulis nigricantibus late fulvo marginatis; tectricibus alarum minoribus dorso concoloribus, majoribus brunneis, fascia duplici alba nigraque terminatis; primariis brunnescenti-nigris, externe pallidioribus; secundariis externe speculo saturate cyanescenti-viridi ornatis, fascia subterminali nigra, altera apicali alba; axillaribus et subalaribus albis: rostro olivascenti-flavo, culmine saturatiore, ungue nigricante, mandibulæ basi haud nigro maculata; pedibus saturate aurantiacis; iride saturate brunnea. Long. tota circa 19·5, alæ 10·0, caudæ 4·0, culm. 2·05, tarsi 1·6. (Descr. maris adulti ex Puebla. Mus. nostr.)

♂ feminæ similis, sed paullo major.

Hab. Mexico, Laguna del Rosario, Tlaxcala and San Ysidro, Puebla (*Ferrari-Perez*[1 2 3]).

We possess an adult female of this Mexican Duck, obtained by Ferrari-Perez in Puebla, where he also procured the type specimens.

This species is said by Mr. Ridgway to be most like *A. fulvigula* from Florida, but the last row of wing-coverts has a distinct subterminal band of white, and the secondaries a broad terminal bar of the same. The general colour is also much less fulvous, and the cheeks are streaked with dusky; there is no black spot on the lower basal angle of the upper mandible.

3. **Anas aberti.**

Anas obscura, Dugès (nec Gm.), La Nat. i. p. 143[1]; Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 314[2]; Scl. & Salv. P. Z. S. 1876, p. 380[3] (part.); Herrera, La Nat. (2) i. pp. 187, 328 (1888)[4].

Anas aberti, Ridgw. Pr. U. S. Nat. Mus. i. p. 250[5]; ix. p. 173[6]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 204[7].

A. diazi similis, sed multo minor, et secundariis fascia alba (0·35) distincta terminatis, sed tectricibus secundariorum minime albo fasciatis; tectricibus minoribus brunnescenti-schistaceis, sordide brunneo marginatis, tectricibus medianis extus velutino-nigris, fasciam distinctam formantibus: rostro flavescenti-brunneo, culmine saturatiore, ungue fuscescente; pedibus flavis. Long. tota circa 16·0, alæ 8·5, caudæ 3·25, culm. 1·65, tarsi 1·3. (Descr. ex scriptis R. Ridgway.)

Hab. Mexico, Mazatlan (*Abert* [5]), Tepic (*Grayson* [2]), Valley of Mexico (*Herrera* [4]), Guanajuato, Guadalajara (*Dugès* [1]).

We have not been able to examine an example of this bird, which is also closely related to *A. fulvigula* from Florida. Mr. Ridgway says that its small size, and, to a certain extent, its narrow bill, recall the species of *Querquedula*.

Grayson [2] shot many specimens near Tepic, but never saw one in the vicinity of Mazatlan. The species doubtless breeds in the former place, as he found them there during the month of June in pairs.

CHAULELASMUS.

Chaulelasmus, Bp. Comp. List Birds Eur. & N. Amer. p. 56 (1838); Gray, List Gen. Birds, p. 74 (1840); id. Gen. Birds, iii. p. 617 (1845); Salvad. Cat. Birds Brit. Mus. xxvii. p. 221 (1895).

This genus may at once be distinguished from the true Ducks by the distinct lamellæ of the upper mandible, which project prominently over the lower. The chestnut wing-coverts are also a feature of the Gadwalls, and the speculum is black and white in both sexes, the white patch being on the inner side. The bill is not very broad, somewhat compressed, and shorter than the head.

Two species are known—the ordinary Gadwall, *C. streperus*, common to the Old and New Worlds, and a smaller form, *C. couesi*, supposed to be peculiar to the Fanning group of islands in the Pacific.

1. Chaulelasmus streperus.

Anas strepera, Linn. Syst. Nat. i. p. 200 [1]; Scl. & Salv. P. Z. S. 1876, p. 382 [2]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 173 [3]; Herrera, La Nat. (2) i. pp. 187 [4], 328 [5]; Allen, Bull. Amer. Mus. Nat. Hist. v. p. 32 [6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 49 [7].

Chaulelasmus streperus, Dugès, La Nat. i. p. 142 [8]; Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 315 [9]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 506 [10]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 221 [11].

Pileo rufescenti-brunneo, saturatiore brunneo maculato; capitis et colli lateribus ferrugineo tinctis et brunneo minute punctatis; collo postico sordide brunneo; interscapulio et scapularibus intimis nigricantibus, lineis albis vel pallide fulvis angustissimis irroratis, scapularibus externis arenario marginatis; dorso postico saturate brunneo, vix albo vermiculato, uropygio supracaudalibusque velutino-nigris; mento albido, gutture brunneo, nigro maculato; præpectore albo, nigro circulariter fasciato; pectore et abdomine albis, hoc imo fusco fasciato; corporis lateribus, hypochondriis et crisso albis vel fulvescentibus, fusco anguste fasciatis; subcaudalibus velutino-nigris; subalaribus et axillaribus pure albis; tectricibus alarum minoribus brunneis, medianis castaneis; tectricibus primariorum et remigibus cinerascenti-brunneis, secundariis extimis albo terminatis; secundariis medianis externe nigris, intimis externe albis, speculum nigrum et album formantibus; rectricibus cinerascenti-brunneis, pallidiore brunneo marginatis: rostro plumbeo; pedibus sordide aurantiacis; iride corylina. Long. tota circa 21·0, alæ 11·0, caudæ 4·0, culm. 1·9, tarsi 1·5. (Descr. maris adulti ex Zacatecas. Mus. nostr.)

♂ *in ptilosi vera æstiva* feminæ adultæ similis, sed saturatior.

♀. Supra niger, fulvo marmoratus; pileo nigro, arenario-fulvo anguste striolato; capite reliquo et collo

pallide arenariis, nigro anguste striolatis; corpore subtus rufescenti-fulvo, nigro multi-maculato, præpectore præcipue nigro maculatim notato; pectore et abdomine pure albis; alis et axillaribus sicut in mari coloratis, sed tectricibus medianis minus saturate castaneis: rostro aurantiaco-brunneo, nigro variegato. Long. tota circa 19·0, alæ 9·8, caudæ 3·5. (Descr. feminæ adultæ ex Zacatecas. Mus. nostr.)

Juv. feminæ adultæ similis, sed corpore subtus toto nigro maculato, et tectricibus alarum medianis minime castaneis.

Hab. North America, breeding chiefly within the United States [7].—Mexico, San Diego, Sonora (*Robinette* [6]), Rio Janos, Chihuahua (*Kennerly* [10]), Mazatlan (*Grayson* [9]), Presidio (*Forrer* [11]), Guanajuato, Guadalajara (*Dugès* [8]), Zacatecas (*Richardson* [11]), Valley of Mexico (*Herrera* [4 5]), Tehuacan, Puebla, Laguna del Rosario, Vera Cruz, Barra de Santa Ana (*Ferrari-Perez* [3]).—West Indies [11].—Temperate portions of Northern Europe and Asia, wintering in N.E. Africa, India, and China [11].

The Gadwall is an inhabitant of the temperate portions of Europe and North America, wintering southward of its breeding-range. Grayson states that it is abundant in the neighbourhood of Mazatlan, from November until late in the spring.

In habits *C. streperus* resembles the Mallard, but is in every respect a freshwater Duck, feeding on water-plants and small molluscs. The species is rather shy, frequenting marshy places, where it easily finds a hiding-place. The nest is placed on the ground or in a tuft of reeds and is well-concealed. The eggs vary from nine to thirteen in number, and are of a pale creamy-yellow.

MARECA.

Mareca, Steph. in Shaw's Gen. Zool. xii. pt. 2, p. 130 (1824); Salvad. Cat. Birds Brit. Mus. xxvii. p. 227 (1895); Oates, Man. Game-Birds of India, ii. p. 168 (1899).

The members of this genus may be distinguished from the rest of the true Ducks by their short bill, which is wider at the base than at the tip, the lamellæ of the upper mandible being hardly perceptible when the bill is viewed laterally. The sexes, as pointed out by Mr. Oates, differ greatly, not only in general colour, but in that of the speculum also.

Three species are known—*M. penelope*, inhabiting the Palæarctic Region, and *M. americana*, North and Central America, while *M. sibilatrix* is found in the southern parts of South America.

✓1. Mareca americana.

Anas americana, Gm. Syst. Nat. i. 2, p. 526 [1]; Herrera, La Nat. (2) i. pp. 187, 328 [2]; Allen, Bull. Amer. Mus. N. H. v. p. 32 [3]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 49 [4].

Mareca americana, Scl. & Salv. Ibis, 1859, p. 231 [5]; P. Z. S. 1876, p. 394 [6]; Salv. Ibis, 1865, p. 193 [7]; Dugès, La Nat. i. p. 143 [8]; Lawr. Mem. Bost. Soc. N. H. ii. p. 315 [9]; Sumichr. La Nat. v. p. 234 [10]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 520 [11]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 233 [12].

Anas penelope, Wagler (nec Linn.), Isis, 1831, p. 532 [13].

Fronte et pileo summo fulvescenti-albis; capitis lateribus et collo rufescenti-fulvis, nigro punctulatis; regione postoculari metallice viridi, fulvo fasciata; interscapulio et scapularibus vinaceis, illo mediano et his minute nigro fasciatis; dorso imo et uropygio fere nigris; supracaudalibus nigris, medianis crebre albo vermiculatis, externis fulvo marginatis; præpectore, corporis lateribus et hypochondriis vinaceis, his minute nigro fasciolatis, pectore et corpore reliquo subtus albis; subcaudalibus nigris; tectricibus alarum minoribus et medianis cinerascenti-brunneis, majoribus albis nigro terminatis; tectricibus primariorum et remigibus cinerascenti-brunneis, secundariis medianis externe nigris basin versus paullo viridibus, secundariis intimis externe nigris, albo marginatis; rectricibus cinerascenti-brunneis, externis albo irregulariter marginatis; subalaribus griseis; axillaribus albis: rostro pallide cinereo, ungue nigro; pedibus pallide cyanescentibus; iride brunnea. Long. tota circa 20·0, alæ 10·5, caudæ 4·0, culm. 1·5, tarsi 1·5. (Descr. maris adulti ex Dueñas. Mus. nostr.)

♀ notæo nigro, plumis cinerascenti-brunneo marginatis; scapularibus fulvo limbatis; alis caudaque ut in mari coloratis, secundariis intimis saturate brunneis; pileo nigro rufescenti-fulvo variegato; fronte et capite reliquo, gutture et collo pallide arenariis, minute nigro striolatis; corpore subtus albo, præpectore et subcaudalibus rufescenti-brunneo alboque fasciatis, marginibus pallidioribus; corporis lateribus et hypochondriis fulvescenti-brunneis. Long. tota circa 19·0, alæ 9·5, caudæ 3·5, culm. 1·5, tarsi 1·5. (Descr. feminæ adultæ ex Dueñas. Mus. nostr.)

♂ *juv.* feminæ adultæ similis, sed lætius colorata, et clarius maculata.

Hab. North America, from the Arctic Ocean south in winter, breeding chiefly north of the United States [4].—Mexico (*Wagler* [13]), Cachuta, Sonora (*Robinette* [3]), Hermosillo (*Ferrari-Perez* [12]), Presidio de Mazatlan (*Forrer* [12]), Mazatlan (*Grayson* [9]), Valley of Mexico (*Herrera* [2], *Sumichrast* [10]), Guanajuato (*Dugès* [8]), east coast of Mexico (*Dresser* [11]); Guatemala, Dueñas [12], Chiapam [12], Lake of Atitlan [5], Laguna [5], Acapam [7], San Gerónimo (*O. S.*).—Trinidad [11]; West Indies [12].—Occasional in Europe [11].

The American Wigeon breeds throughout the Arctic and Subarctic Regions of North America, and in winter ranges south over the inland waters and on the sea-coasts as far as Central America, being frequently found in large flocks. In Mexico, Mr. Dresser states that he noticed the species on the east coast [11]; and Grayson records it as abundant near Mazatlan, on the west, from November until late in spring [8]. We found this bird common on the Lake of Atitlan in Guatemala [5], in May, and also near the village of Laguna [5], as well as on the Pacific coast of that country [12].

In winter, when the Wigeon visits the United States, it frequents the freshwater pools and lakes, and feeds on roots and seeds of water-plants, insects, molluscs, &c.; but on certain parts of the coast the bird, like the Canvas-back Duck, subsists on the roots of *Vallisneria*.

The nest is placed on high and dry ground, at some distance from water; it is a mere depression in the soil, lined with the bird's own down. The eggs are of a creamy or ivory-white colour.

NETTIUM.

Nettion, Kaup, Natürl. Syst. p. 95 (1829).
Nettium, Salvad. Cat. Birds Brit. Mus. xxvii. p. 238 (1895).

The members of this genus differ from the Wigeons (*Mareca*) and the rest of the

typical Ducks in their small size, and in the shape of the bill, which is throughout of the same width, the tip being subtruncate. The black and green speculum consists of two longitudinal bands, and is present in both sexes.

Some sixteen species are known, of which one (*N. carolinense*) is a resident in, and another (*N. crecca* of Europe) an occasional visitor to, North America. The former alone occurs in Central America, the rest being peculiar to the Old World or to South America.

1. Nettium carolinense.

Anas carolinensis, Gm. Syst. Nat. i. 2, p. 533[1]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 173[2]; Herrera, La Nat. (2) i. pp. 187[3], 329[4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 50[5].

Querquedula carolinensis, Scl. P. Z. S. 1857, p. 215[6]; 1860, p. 254[7]; Moore, P. Z. S. 1859, p. 65[8]; Scl. P. Z. S. 1859, p. 369[9]; Scl. & Salv. P. Z. S. 1876, p. 385[10].

Nettion carolinensis, Dugès, La Nat. i. p. 143[11]; Lawr. Mem. Bost. Soc. N. H. ii. p. 314[12]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 2[13]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 250[14].

Nettium carolinense, Sharpe, Hand-list Birds, i. p. 219[15].

Supra nigricans, anguste albo transvermiculatum; uropygio saturate brunneo; capite et collo superiore castaneis; plaga nitenti-viridi utrinque ab oculo postico ad nucham producta, fascia suboculari alba indistincta; collo postico nigro; fascia crescenti alba ad latera pectoris posita, per latera colli extensa; mento nigricante; collo imo nigro; præpectore pallide rufo lavato, nigro guttato; pectore et abdomine albis, corporis lateribus et hypochondriis nigris minute albo transfasciolatis; tectricibus alarum cinerascenti-brunneis, majoribus cineraceis, late rufo terminatis; primariorum tectricibus et primariis cinerascenti-brunneis, secundariis extimis nigris, medianis læte metallice viridibus, speculum formantibus et albo terminatis; secundariis intimis griseis, extus nigro marginatis; subalaribus albis, fusco variegatis; axillaribus albis; subcaudalibus nigris, medianis longioribus albo terminatis, lateralibus albis vel fulvis, ad basin nigris; rectricibus cinerascenti-brunneis, marginibus pallidioribus: rostro nigricante; pedibus brunnescenti-griseis; iride corylina. Long. tota circa 14·5, alæ 7·3, caudæ 3·0, culm. 1·6, tarsi 1·1. (Descr. maris adulti ex Presidio. Mus. nostr.)

♀. Supra brunnescenti-nigrum, plumis ad basin pallide rufescentibus, et eodem colore fasciatis; capite albicante, crebre nigro maculato, pileo saturatiore; linea postoculari nigra; subtus albescens, plumis medialiter fusco marmoratis, pectore rufescentiore; alis ut in mari coloratis. (Descr. feminæ adultæ ex Presidio. Mus. nostr.)

Juv. feminæ adultæ similis, sed tectricibus alarum pallide fulvo marginatis, abdominis et gastræi reliqui plumis medialiter fusco notatis.

Hab. North America, breeding chiefly north of the United States[5].—Mexico, Hermosillo, Sonora[14], Laguna del Rosario[2] (*Ferrari-Perez*), Chihuahua (*Kennerly*[13]), Mazatlan (*Grayson*[12]), Presidio (*Forrer*[14]), Zacatecas (*Richardson*[14]), Guanajuato, Guadalajara (*Dugès*[11]), Valley of Mexico (*Herrera*[3 4]), Vera Cruz (*Sallé*[7]), Jalapa (*De Oca*[9]), Orizaba (*Botteri*[6]); Honduras (*Dyson*[10]), Aloor River (*Leyland*[8]).—West Indies[14].—Accidental in Europe[14].

N. carolinense is widely distributed throughout North America, breeding in the Arctic and Subarctic Regions, as far south as Montana, Wisconsin, Iowa, and Oregon, in the United States. In winter it migrates to Central America, where specimens

have been observed as far south as Honduras, but we never met with the bird in Guatemala. It is found at this season in the Western United States, and visits California in large numbers. The species is said by Grayson to be abundant at Mazatlan from November to March [12]. Its Mexican name is given by Herrera [3] as "Metzcanauhtli" or "Metzcanahuhtli."

This little Teal is tamer than most of the North-American Ducks, and, the flesh being much valued as an article of food, large numbers are annually slaughtered in winter. It is essentially a freshwater bird, and is rarely seen near the sea. Its food consists of the seeds of grass, berries, worms, small molluscs, and aquatic insects. The nest is a depression in the ground, lined with down and feathers, and often at some distance from water. The eggs are sometimes as many as sixteen or eighteen in number, and are of a pure ivory-white [13].

DAFILA.

Dafila, Stephens, in Shaw's Gen. Zool. xii. pt. 2, p. 126 (1824); Salvadori, Cat. Birds Brit. Mus. xxvii. p. 270 (1895).

The Pintail Ducks may be recognized by the sharply-pointed tail, the central feathers being very long and pointed in the male; the bill is wider near the tip than at the base, and the neck is long and slender.

Of the three species described, *D. acuta*, inhabiting the Northern Hemisphere, is the only one found within our limits. *D. spinicauda* is a native of the southern half of South America.

D. modesta, Tristram, from the Phœnix Group, Central Pacific, is doubtfully distinct from *D. acuta*.

1. Dafila acuta.

Anas acuta, Linn. Syst. Nat. i. p. 202 [1]; Wagl. Isis, 1831, p. 532 [2].

Dafila acuta, Scl. P. Z. S. 1857, p. 206 [3]; Scl. & Salv. Ibis, 1859, p. 231 [4]; P. Z. S. 1876, p. 391 [5]; Lawr. Ann. Lyc. N. Y. viii. p. 13 [6]; ix. p. 143 [7]; Mem. Bost. Soc. Nat. Hist. ii. p. 314 [8]; Dugès, La Nat. i. p. 143 [9]; v. Frantz. J. f. Orn. 1869, p. 378 [10]; Sumichr. La Nat. v. p. 234 [11]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 511 [12]; Nutting, Pr. U. S. Nat. Mus. vi. p. 390 [13]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174 [14]; Herrera, La Nat. (2) i. pp. 187 [15], 329 [16]; Richm. Pr. U. S. Nat. Mus. xvi. p. 531 [17]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [18]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 51 [19]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 270 [20].

Supra brunnea, fasciis nigris et albis anguste fasciolata; scapularibus longioribus nigris, late brunnescenti-albo marginatis; supracaudalibus medianis saturate brunneis, marginibus pallidioribus, lateralibus nigris intus albo marginatis; rectricibus medianis elongatis, nigris, reliquis sordide cinerascentibus, albido marginatis; tectricibus alarum cinerascenti-brunneis, majoribus pallide rufo terminatis, fasciam alarem formantibus; primariis brunnescenti-griseis, apicem versus saturatioribus, intus pallidioribus; secundariis externis metallice viridibus vel (sub certâ luce) æneo-purpurascentibus, speculum alare formantibus, late

albo terminatis, fascia subterminali nigra instructis, intus brunneis; secundariis intimis medialiter late nigris, horum remige extimo extus nigro, intus albo marginato; capite et collo superiore sordide brunneis, hoc saturatiore; occipitis lateribus purpurascente et viridi nitentibus; occipite ipso nigro; collo postico brunnescenti-griseo, minute variegato; collo imo et fascia colli superioris utrinque albis, pectore concoloribus; corpore reliquo subtus albicante albo, abdomine minute brunneo vermiculato; crisso et subcaudalibus nigris, plumis externis longioribus extus albis; subalaribus grisescentibus albo vermiculatis; axillaribus albis, rhachidibus paullo brunneo variegatis: rostro nigricante, lateraliter plumbeo; pedibus plumbescenti-nigris; iride saturate brunnea. Long. tota circa 24–30, alæ 11·0, caudæ 7·3–9·5, culm. 1·85–2·1, tarsi 1·6–1·8. (Descr. maris adulti ex Zacatecas. Mus. nostr.)

♂ *in ptilosi vera æstiva* feminæ adultæ similis, sed speculum alare exhibens.

♀. Supra saturate brunnea, plumis singulis pallide arenario vel fulvo limbatis vel irregulariter fasciatis, pileo et collo albicanti-fulvis, nigro striolatis; corpore subtus sordide albo, fusco indistincte variegato, corporis lateribus et hypochondriis, abdomine et subcaudalibus brunneo striatis; alis brunneis, tectricibus minoribus et medianis albo terminatis, majoribus et secundariis latius albo terminatis, fasciam alarem duplicem formantibus; speculo alari brunnescenti-nigro; subalaribus brunneis, albo terminatis; axillaribus albis, brunneo fasciatis: rostro grisescenti-nigro, mandibula rufescenti-brunnea. Long. tota circa 23·5, alæ 10·1, caudæ 5·0, culm. 2·1, tarsi 1·65. (Descr. feminæ adultæ ex Dueñas. Mus. nostr.)

♂ *juv.* feminæ adultæ similis, sed speculum alare exhibens; pectore et gastræo reliquo minute brunneo striatis.

Hab. North America, breeding from the northern parts of the United States northward [19].—Mexico (*Wagler* [2]), Cachuta, Sonora (*Robinette* [18]), Mazatlan (*Grayson* [8]), Zacatecas (*Richardson* [20]), Guanajuato, Guadalajara (*Dugès* [9]), Coahuayana (*Xantus* [8]), Valley of Mexico (*Sumichrast* [11], *Herrera* [15]), Laguna del Mayorazgo, San Baltasar, Puebla (*Ferrari-Perez* [14]), Jalapa, Vera Cruz (*Sallé* [3]); British Honduras, Belize (*O. S.* [4 5]); Guatemala, Lake of Dueñas (*O. S.* [4 5 20]); Nicaragua, Sucuyá (*Nutting* [13]); Costa Rica, San José (*Calleja* [7 19]), Cartago (*v. Frantzius* [10]), Rio Escondido (*Richmond* [17]); Panama (*M'Leannan* [5 6]).—Greater Antilles, Cuba [20].—Northern Europe and Northern Asia, migrating in winter to North Africa, the Indian Peninsula and Ceylon, China and Japan [20].

D. acuta is found in the northern parts of both Hemispheres, breeding in the Arctic and Subarctic Regions, and visiting Central America in winter, where Grayson says that the species is common in the neighbourhood of Mazatlan at this season; Salvin also noticed it at Belize in British Honduras in December [4]. We found the Pintail plentiful on the Lake of Dueñas in Guatemala, whence it departed for the north in March [4]. Kennicott states that it migrates northward in immense flocks.

In habits this bird much resembles the Mallard, and the food of both species is the same; it is, however, somewhat later in nesting than *Anas boscas*. The nest is invariably found near water, and is usually placed on low dry ground, under the shelter of trees and bushes, but never in grass-hummocks, and is composed of dry grass and a few sticks, plentifully lined with down. The eggs are from six to nine in number, of a pale green or greyish-green colour, almost white [12].

QUERQUEDULA.

Querquedula, Stephens, in Shaw's Gen. Zool. xii. pt. 2, p. 142 (1824) ; Salvad. Cat. Birds Brit. Mus. xxvii. p. 290 (1895).

The blue wing-coverts are the leading character which distinguishes the Blue-winged Teal from all the other true Ducks, except the Shovelers (*Spatula*), and here the shape of the bill is a recognizable character. In the present genus the bill is slightly wider at the tip than at the base, but is not broadened out as in *Spatula*.

Of the five species of *Querquedula* known, one, viz. the Garganey (*Q. circia*), is found in the Old World, and the remaining four are American, two of them occurring within our limits.

1. Querquedula discors.

Anas discors, Linn. Syst. Nat. i. p. 205 [1] ; Licht. Preis-Verz. Mex. Vög. p. iii (1830) [2] ; Cab. J. f. Orn. 1863, p. 59 [3] ; Wagl. Isis, 1831, p. 532 [4] ; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174 [5] ; Zeledon, An. Mus. Nac. Costa Rica, i. p. 132 (1887) [6] ; Herrera, La Nat. (2) i. pp. 187, 329 [7] ; Stone, Pr. Acad. Phil. 1890, p. 203 [8] ; Cherrie, Auk, 1892, p. 329 [9] ; Richm. Pr. U. S. Nat. Mus. xvi. p. 531 [10] ; Allen, Bull. Am. Mus. N. H. v. p. 32 [11] ; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 50 [12].

Querquedula discors, Scl. P. Z. S. 1857, p. 206 [13] ; 1859, p. 393 [14] ; 1860, p. 254 [15] ; Scl. & Salv. Ibis, 1859, p. 231 [16] ; P. Z. S. 1876, p. 383 [17] ; Salv. Ibis, 1865, p. 193 [18] ; 1889, p. 377 [19] ; P. Z. S. 1870, p. 219 [20] ; Cat. Strickland Coll. p. 535 [21] ; Lawr. Ann. Lyc. N. York, ix. p. 143 [22] ; Mem. Bost. Soc. Nat. Hist. ii. p. 314 [23] ; Dugès, La Nat. i. p. 143 [24] ; Sumichr. La Nat. v. p. 234 [25] ; Nutting, Pr. U. S. Nat. Mus. vi. pp. 380 [26], 390 [27] ; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 531 [28] ; Salvad. Cat. Birds Brit. Mus. xxvii. p. 299 [29].

Pterocyanea discors, Moore, P. Z. S. 1859, p. 64 [30] ; v. Frantz. J. f. Orn. 1869, p. 378 [31].

Cyanopterus discors, Taylor, Ibis, 1860, p. 314 [32].

Capite et collo superiore saturate brunnescenti-griseis, pileo et mento saturatioribus ; plaga alba crescentiformi ante oculum posita, a fronte usque ad gulam lateralem extensa ; interscapulio et scapularibus nigricantibus, pallide rufescenti-fulvo fasciatis ; dorso medio et imo, uropygio et supracaudalibus saturate brunneis, viridi nitentibus ; corpore subtus sordide rufescente, nigro crebre maculato ; subalaribus nigris ; crisso laterali utrinque albo ; tectricibus alarum et scapularum pogonio externo pallide cinerascenti-cyaneis, majoribus nigris late albo terminatis, fasciam alarem formantibus ; tectricibus primariorum et remigibus saturate cinerascenti-brunneis, secundariis medianis extus saturate metallice viridibus, speculum alare formantibus ; secundariis intimis et scapularibus longioribus extus nigricantibus, rhachidibus pallide fulvis ; subalaribus sordide cærulescentibus, majoribus et axillaribus albis ; rectricibus brunneis, pallide brunneo marginatis : rostro nigro ; pedibus flavicantibus ; iride brunnea. Long. tota circa 16·0, alæ 7·5, caudæ 3·2, culm. 1·75, tarsi 1·2. (Descr. maris adulti ex Tampico. Mus. nostr.)

♂ *in ptilosi vera æstiva* feminæ adultæ similis, sed magis distincte maculata, et speculum alarem exhibens.

♀. Supra saturate brunnea, fulvo fasciata ; scapularibus pallide fulvo marginatis ; pileo nigricante, capitis lateribus colloque pallide arenario-fulvis, minute nigro punctulatis et striatis ; gutture fere immaculato ; præpectore maculis circularibus nigris et albis notato ; corpore reliquo subtus albicante, plumis medialiter

fuscis; ala sicut in mari adulto colorata, sed speculo sordide æneo-viridi; secundariis intimis et scapularibus brunneis, vix rhachidem pallidam exhibentibus. Long. tota circa 15·0, alæ 7·4, caudæ 3·1, culm. 1·65, tarsi 1·2. (Descr. feminæ adultæ ex Presidio. Mus. nostr.)

Juv. feminæ adultæ similis, sed abdomine haud maculato, et speculo alari sordide cinerascenti-brunneo, minime metallico distinguenda.

Hab. NORTH AMERICA in general, but chiefly eastward; north to Alaska, south to Lower California; casual in California; breeding from Kansas and Southern Illinois northward [12].—MEXICO (*Deppe & Schiede* [2 3], *Wagler* [4]), Cachuta, Sonora (*Robinette* [11]), Tampico (*Richardson* [29]), Ciudad in Durango, Presidio de Mazatlan (*Forrer* [29]), Mazatlan (*Grayson* [23]), Guanajuato, Guadalajara (*Dugès* [24]), Valley of Mexico (*Herrera* [7], *Sumichrast* [25]), Laguna de Chapulco, Puebla (*Ferrari-Perez* [5]), Jalapa, Vera Cruz (*Sallé* [13 15]), Oaxaca (*Boucard* [14]), Progreso, Yucatan (*Stone & Baker* [8]), Cozumel I. [19], Mugeres I. [29] (*Gaumer*); BRITISH HONDURAS, Belize (*Leyland* [30]); GUATEMALA (*Constancia* [21]), Acapam [18], Coban [29], Dueñas, Santana Mixtan [16 29] (*O. S.*); HONDURAS, Omoa (*Leyland* [30]), Lake of Yojoa, Tigre I., Bay of Fonseca (*Taylor* [32]); NICARAGUA, San Juan del Sur [26], Sucuyá [27] (*Nutting*), Rio Escondido (*Richmond* [10]); COSTA RICA, San José (*Zeledon* [6], *Cherrie* [9], *Calleja* [22 29]), Cartago (*Zeledon* [6]), San Antonio (*v. Frantzius* [31]); PANAMA, Laguna del Castillo (*Arcé* [20 29]).—COLOMBIA [29]; ECUADOR [29]; PERU [29]; TRINIDAD [28]; WEST INDIES [29].

The Blue-winged Teal breeds throughout the greater part of the United States, and as high as 60° N. lat. It is met with on the coast of Alaska and in Vancouver Island, but is unknown on the Pacific coast between the latter locality and the Gulf of California [27]. The species is a winter visitor to Mexico and Central America. Grayson found it common in the neighbourhood of Mazatlan, and the bird probably breeds there, as a few remain throughout the summer. Leyland states that *Q. discors* breeds near Omoa in the Republic of Honduras, arriving in October with the periodical northerly winds in flocks of from two to three hundred, and retiring to the rivers as the swamps dry up; but it is principally known as a winter visitor. In Guatemala we found the species abundant on the Lake of Dueñas, where it arrives in September and leaves in March or April; birds were met with both in high and low districts, though chiefly on the lake.

This Teal is one of the first of the northern Ducks to reach its winter home, and it arrives in the United States in September, the same month in which the bird is first seen in Guatemala. The food is similar to that of ordinary freshwater Ducks; but in the Southern United States the species frequents the rice- and corn-fields, and after feeding in these places becomes very fat and is esteemed as a delicacy for the table. The nest is placed on the ground among reeds and coarse herbage, generally near the water; it consists of a few reeds and rushes, lined with down and feathers. The eggs are from eight to twelve in number, and are of a clear ivory-white colour [28].

2. Querquedula cyanoptera.

Anas cyanoptera, Vieill. N. Dict. d'Hist. Nat. v. p. 104[1]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174[2]; Allen, Bull. Amer. Mus. N. H. v. p. 33[3]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 51[4].

Querquedula cyanoptera, Scl. P. Z. S. 1856, p. 311[5]; Dugès, La Nat. i. p. 143[6]; Lawr. Mem. Bost. Soc. N. H. ii. p. 314[7]; Sumichr. La Nat. v. p. 234[8]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 534[9]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 303[10].

Capite, collo et corpore subtus toto castaneis; subcaudalibus nigris; pileo nigricante; interscapulio summo et scapularibus superioribus castaneis, nigro maculatis; dorso medio nigro, castaneo circulariter fasciato; dorso imo, uropygio et supracaudalibus nigricanti-brunneis, plumis singulis griseo marginatis; scapularibus longioribus nigris, rhachidibus rufescenti-fulvis, duabus extimis pallide cinerascenti-cyaneis; tectricibus alarum quoque cinerascenti-cyaneis; tectricibus primariorum remigibusque saturate brunneis, secundariis anguste albo terminatis; speculo alari metallice viridi; secundariis intimis externe nigris, rhachidibus pallidis; tectricibus majoribus cinerascenti-nigris, albo late terminatis, fasciam conspicuam formantibus; subalaribus minoribus cyanescenti-griseis, majoribus et axillaribus albis; rectricibus saturate brunneis, lateralibus extus pallide rufo mixtis: rostro nigro; pedibus flavis; iride saturate brunnea. Long. tota circa 18·0, alæ 7·9, caudæ 3·5, culm. 1·9, tarsi 1·25. (Descr. maris adulti ex Brownsville, Texas. Mus. nostr.)

♀ feminæ *Q. discordis* similis, sed notæo dilutiore brunneo, marginibus arenariis magis distinctis; gastræo brunneo vel rufescenti-fulvo clarius tinctis. Long. tota circa 16·0, alæ 7·3, caudæ 3·4, culm. 1·85, tarsi 1·25. (Descr. feminæ adultæ ex Presidio. Mus. nostr.)

Juv. feminæ adultæ similis, sed gastræi maculis angustioribus, magis striatiformibus.

Hab. Western North America, from British Colombia southward; east to the Rocky Mountains and Southern Texas; casual in the Mississippi Valley and Florida[4].—Mexico, rivers and lagoons of both coasts (*Sumichrast*[8]), San Diego, Sonora (*Robinette*[3]), Mazatlan (*Grayson*[7]), Presidio (*Forrer*[10]), Guanajuato, Guadalajara (*Dugès*[6]), Laguna de Chapulco, Puebla (*Ferrari-Perez*[2]), Vera Cruz (*Sallé*[5]).—Paraguay[10]; Argentina[10]; Chile[10]; Patagonia[10]; Falkland Is[10].

Q. cyanoptera differs from *Q. discors* in the uniform chestnut colour of the head, neck, and under surface of the body. It is almost exclusively a western species in North America, and though rather common at Mazatlan during the winter and spring months, is never seen in large numbers[7]. This Teal has been recorded from various localities in Mexico, but is not known to visit any other part of Central America, while in South America the species has a widely extended range, apparently breeding in many parts of that continent.

The Cinnamon Teal associates with the Blue-winged Teal in flocks, and the habits of the two species are similar. The nest is placed in marshy ground, usually near ponds or still water; it is made of coarse grass and lined with down. The eggs are from twelve to fourteen in number, and are of an ivory-white colour with a deep creamy tinge[9].

SPATULA.

Spatula, Boie, Isis, 1822, p. 564; Salvad. Cat. Birds Brit. Mus. xxvii. p. 306 (1895).

The Shovelers are distinguished from all other Ducks by the peculiar shape of their

bill, which widens out towards the tip, so that it is twice as broad at the apex as at the base; they also have the upper wing-coverts of a clear greyish-blue colour.

Four species of *Spatula* are known, three of which belong to the southern areas of the globe—*S. rhynchotis* inhabiting Australia and New Zealand, *S. platalea* South America, and *S. capensis* South Africa. The common Shoveler (*S. clypeata*) is found in the Palæarctic and Nearctic Regions, and extends its range in winter to Central America.

1. Spatula clypeata.

Anas clypeata, Linn. Syst. Nat. i. p. 200 [1]; Wagl. Isis, 1831, p. 532 [2]; Licht. Preis-Verz. Mex. Vög. p. iii (1830) [3]; Cab. J. f. Orn. 1863, p. 59 [4].

Spatula clypeata, Scl. & Salv. Ibis, 1859, p. 231 [5]; P. Z. S. 1876, p. 396 [6]; Scl. P. Z. S. 1862, p. 20 [7]; v. Frantz. J. f. Orn. 1869, p. 378 [8]; Lawr. Mem. Bost. Soc. N. H. ii. p. 314 [9]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 526 [10]; Herrera, La Nat. (2) i. pp. 187 [11], 329 [12]; Allen, Bull. Am. Mus. N. H. v. p. 33 [13]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 51 [14]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 306 [15].

Rhynchaspis clypeata, Dugès, La Nat. i. p. 143 [16].

Supra saturate brunnea; uropygio et supracaudalibus nigris viridi nitentibus; interscapulii lateribus et scapularibus brevioribus albis, his longioribus nigris viridi lavatis et medialiter albis, externe pallide grisescenti-cyaneis; tectricibus alarum quoque grisescenti-cyaneis, majoribus nigricantibus, in dimidio apicali albis, fasciam alarem latam formantibus, tectricibus primariorum et remigibus saturate brunneis, secundariis extus saturate viridibus, speculum alarem exhibentibus; secundariis intimis nigris viridi nitentibus; capite et collo superiore saturate nitenti-viridibus; pileo, gula et præpectore nigricantibus; collo imo et pectore summo albis; pectore reliquo et abdomine castaneis; corporis lateribus, hypochondriis et crisso fere cinnamomeis, nigro transversim lineatis; crissi lateribus conspicue albis; subcaudalibus nigris, viridi nitentibus; subalaribus et axillaribus albis; rectricibus medianis brunneis, reliquis albis brunneo medialiter marmoratis: rostro plumbeo; pedibus rufescenti-aurantiacis; iride flava. Long. tota circa 20·0, alæ 10·0, caudæ 3·7, culm. 2·75, tarsi 1·4. (Descr. maris adulti ex Brownsville, Texas. Mus. nostr.)

♂ *in ptilosi vera æstiva* feminæ adultæ similis, sed tectricibus alarum griseo-cyaneis, uropygio et supracaudalibus nigris distinguenda.

♀. Supra brunnea, plumis singulis fulvo fasciatis et marginatis; pileo nigricante arenario, fulvo striolato; capitis lateribus et collo pallide fulvis, nigro crebre striolatis et punctatis; gutture immaculato; præpectore et pectore summo, corporis lateribus et hypochondriis fulvis, nigro circulariter notatis; corpore reliquo subtus rufescenti-fulvo, plumis medialiter celatim nigris; subcaudalibus albicantibus, nigro maculatis; alis ut in mari coloratis, sed sordidioribus, tectricibus alarum cyanescentibus, brunneo adumbratis et angustissime fulvo marginatis; scapularibus externe brunneis: rostro olivascenti-brunneo, maxillæ basi et mandibula tota aurantiacis; pedibus sordide aurantiacis; iride corylina. Long. tota circa 18·5, alæ 8·8, caudæ 3·7, culm. 2·3, tarsi 1·25. (Descr. feminæ adultæ ex Dueñas. Mus. nostr.)

♂ *juv.* feminæ adultæ similis, sed alis lætius picturatis: rostro pallide rufescenti-brunneo; pedibus carneis.

Hab. North America, breeding from Alaska to Texas, not abundant on the Atlantic coast north of the Carolinas [14].—Mexico [6] (*Wagler* [2], *Deppe & Schiede* [3 4]), San Diego, Sonora (*Robinette* [13]), Guaymas (*Palmer* [9]), Mazatlan (*Grayson* [9]), Presidio (*Forrer* [15]), Zacatecas (*Richardson* [15]), Guanajuato, Guadalajara (*Dugès* [15]),

Valley of Mexico (*Herrera* [11 12]), Cosamaloapam (*Boucard* [7]); GUATEMALA, Dueñas [5 6], Huamachal [15] (*O. S.*); COSTA RICA (*v. Frantzius* [8]).—COLOMBIA [15]; WEST INDIES [15].—NORTHERN EUROPE AND ASIA, extending southward in winter to N. Africa, India. and China [15].

The Common Shoveler is an inhabitant of the temperate portions of the Old and New Worlds, just entering the subarctic regions during the breeding-season; it is much more plentiful in the Western United States than in the Eastern, and is found in winter both on the inland lakes and waters, as well as on the Pacific coast. *S. clypeata* occurs throughout Central America in winter, and reaches as far south as Colombia; the species is very common in the vicinity of Mazatlan from November to May, and in Guatemala we met with it on the Lake of Dueñas during this season, the birds taking their departure about the end of March.

In habits and food this Shoveler does not differ from the typical Ducks, but it is said to be especially fond of insect-food. The nest is generally placed in a tussock of reeds, or concealed amongst rushes &c., the depression being lined with dead grass or sedge and also with down. The eggs are from seven to nine in number, and of a pale greenish-grey colour.

Subfam. *FULIGULINÆ*.

In this subfamily are contained the typical Diving-Ducks, which have the hind toe broadly lobed, and a somewhat flattened and depressed bill. They differ from the Erismaturinæ, which are also Diving-Ducks, in their softer and more flexible tail-feathers.

The Pochards and Golden-eyes, which represent the Fuligulinæ in Central America, are all species which breed in northern latitudes and are found within our limits only in winter.

NYROCA.

Nyroca, Fleming, Phil. Zool. ii. p. 260 (1822); Salvad. Cat. Birds Brit. Mus. xxvii. p. 334 (1895).
Aythya, Boie, Isis, 1822, p. 564; Sharpe, Hand-list Birds, i. p. 222 (1899).

The Pochards, and all the other Diving-Ducks, may be distinguished from the Anatinæ by the length of their toes as compared with the tarsus, and by the broad lobe on the hind toe. The bill is more slender than in the Scaup-Ducks (*Fuligula*), being about as wide at the base as it is near the tip. The tail-feathers are normal and not much stiffened. Eight species of Pochard are known, of which two are peculiar to North America, these visiting our region in winter.

1. Nyroca americana.

Fuligula americana, Eyton, Mon. Anat. p. 155 [1]; Scl. & Salv. P. Z. S. 1876, p. 400 [2].
Aythia americana, Dugès, La Nat. i. p. 142 [3].
Aytha americana, Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 315 [4].
Æthyia americana, Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 36 [5].
Aythya americana, Herrera, La Nat. (2) i. pp. 187 [6], 329 [7]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 52 [8].
Nyroca americana, Salvad. Cat. Birds Brit. Mus. xxvii. p. 340 [9].

Supra nigra, dorso minute albido fimbriato, dorso postico saturatiore, uropygio et supracaudalibus nigris; tectricibus alarum saturate griseis, paullulum albo vermiculatis; tectricibus primariorum et primariis apicem versus saturate brunneis, his aliter cinerascentibus; secundariis externis pallide griseis, anguste albo terminatis et fascia subterminali nigra notatis; secundariis interioribus argentescenti-griseis, extus anguste nigro marginatis, intimis saturate brunneis; rectricibus saturate brunneis, pallide brunneo marginatis; pileo et collo superiore læte castaneis, hoc purpureo nitente; collo inferiore, præpectore et pectore summo nigris, hujus plumis albo marginatis; corpore reliquo subtus albo, abdomine fusco vermiculato; crisso et subcaudalibus fuscis, harum longioribus ad apicem albo marmoratis: rostro pallide cæruleo, ad apicem nigro; pedibus cærulescenti-griseis; iride rubra. Long. tota circa 19·0, alæ 9·3, caudæ 2·7, culm. 1·9, tarsi 1·65. (Descr. maris adulti ex Zacatecas. Mus. nostr.)

♀. Supra brunnea, plumis singulis rufo marginatis; dorso medio et imo albo vermiculatis; uropygio nigro; alis caudaque sicut in mari coloratis; capite et collo sordide castaneo-brunneis, pileo saturatiore, mento et gula superiore albidioribus: præpectore cum pectoris lateribus et hypochondriis cinerascenti-brunneis, rufescenti-fulvo late marginatis; pectore et abdomine superiore sordide albis, vix fusco marmoratis; abdomine imo crissoque brunnescenti-fulvis: rostro et pedibus sicut in mari coloratis; iride flava. Long. tota circa 16·5, alæ 8·7, caudæ 2·5, culm. 1·8, tarsi 1·6. (Descr. feminæ adultæ ex Corpus Christi. Mus. nostr.)

Hab. North America, breeding from California, Southern Michigan, and Maine northward [8].—Mexico, Chihuahua, Boca Grande, Janos and Conalitos Rivers (*Kennerly* [5]), Mazatlan (*Grayson* [4]), Zacatecas (*Richardson* [9]), Guanajuato, Guadalajara (*Dugès* [3]), Valley of Mexico (*Le Strange* [2 9], *Herrera* [6 7]).

This species is very nearly related to the Red-headed Pochard of the Old World (*N. ferina*), but the latter differs in having no distinct purplish gloss on the head and neck, and the under surface of the body is finely vermiculated with ashy-grey.

N. americana is generally distributed throughout North America, breeding in high northern regions and wintering southward in the United States &c., at which season it also occurs on both the Atlantic and Pacific coasts. The species has been met with in Mexico, but has not been recorded from any more southern locality.

Though occasionally found singly or in pairs, this Pochard is more often seen during the winter season in large flocks, not associating with other species of Ducks. In the estuaries of the rivers the bird procures food by diving, and feeds on the blades and roots of the *Vallisneria*; but on the shallower waters of the interior its habits are like those of the Mallard. It also eats grass, small lizards, tadpoles, and shell-fish.

The nest is made of grass, rather roughly constructed, and always built in the neighbourhood of water. The eggs are nine or ten in number, greyish-white, tinged with cream-colour [5].

2. Nyroca vallisneria.

Anas valisineria, Wils. Am. Orn. viii. p. 103, t. 70. fig. 5 [1].
Æthyia valisneria, Salvad. Ibis, 1866, p. 198 [2].
Aytha vallisneria, Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 315 [3].
Aythya walisneria, Herrera, La Nat. (2) i. pp. 187 [4], 329 [5].
Aythya vallisneria, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 53 [6].
Fuligula valisneria, Scl. & Salv. P. Z. S. 1876, p. 400 [7].
Æthyia vallisneria, Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 30 [8].
Nyroca vallisneria, Salvad. Cat. Birds Brit. Mus. xxvii. p. 342 [9].

Supra canescenti-alba, minute nigro penicillata, uropygio et supracaudalibus nigris; tectricibus primariorum et primariis saturate grisescenti-brunneis, albo vermiculatis et apicem versus saturatioribus; secundariis griseis, pogonio externo dimidiatim albo, fusco crebre vermiculato; secundariis intimis extus nigro marginatis; rectricibus nigricantibus; fronte, genis anticis et gutture brunneis; mento summo albo; capite reliquo et collo castaneis; collo imo et gastræo reliquo nigris, minute nigro plus minusve celatim penicillatis; subcaudalibus nigris; subalaribus et axillaribus albis, iis marginalibus fusco vermiculatis: rostro virescenti-nigro; pedibus cærulescenti-griseis; iride coccinea. Long. tota circa 21·9, alæ 9·3, caudæ 2·9, culm. 2·6, tarsi 1·6. (Descr. maris adulti ex Brownsville, Texas. Mus. nostr.)

♀. Supra fuscescenti-brunnea, vix cano vermiculatim variegata; scapularibus dorso concoloribus; alis sicut in mari coloratis, sed brunnescentioribus, secundariis extus griseis, rhachidibus nigris; dorso postico, uropygio et supracaudalibus nigricantibus, vix albido vermiculatis; capite colloque undique cum præpectore toto rufescenti-brunneis, pileo saturatiore brunneo, regione oculari et gutture albidioribus; corpore reliquo subtus grisescenti-albo, hypochondriis paululum brunneo marmoratis et cano vix vermiculatis: rostro virescenti-nigro; pedibus plumbeis; iride brunnescenti-rubra. Long. tota 19·0, alæ 8·7, caudæ 2·2, culm. 2·15, tarsi 1·55. (Descr. feminæ adultæ ex Brownsville, Texas. Mus. nostr.)

Hab. North America, breeding from the North-western States, northward to Alaska [6]. —Mexico, Mazatlan (*Grayson* [3]), Valley of Mexico (*Herrera* [4 5]); Guatemala, Dueñas [2 9] (*O. S.*).—West Indies [9].

The Canvas-back Duck inhabits the greater part of North America, breeding from Oregon and the North-western States throughout British America and Alaska to the Arctic Regions. In winter it is found on both sides of the United States and on the waters of the interior, and at this season the bird visits Central America. Grayson found the species not uncommonly at Mazatlan [3], and we obtained a single specimen on the Lake of Dueñas [2], this being probably the southern limit of its range.

Great numbers of *N. vallisneria* are killed for food in the United States, the flesh being highly esteemed. It is principally from the large flocks which occur on the coasts in winter that the supply is obtained for the market. In habits this Duck resembles the foregoing species.

FULIGULA.

Fuligula, Stephens, in Shaw's Gen. Zool. xii. pt. 2, p. 187 (1824); Salvad. Cat. Birds Brit. Mus. xxvii. p. 354 (1895).

The Scaup-Ducks may be distinguished from the Pochards, to which they are closely allied, by the shape of the bill, which is distinctly wider at the tip than it is at the base.

Of the five species known, four inhabit the Northern Hemisphere, and three of these occur in winter within our limits; the fifth is peculiar to New Zealand and the adjacent Auckland and Chatham Islands.

1. Fuligula marila.

Anas marila, Linn. Syst. Nat. i. p. 196[1].

Fulix marila, Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 315[2]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 18[3].

Fuligula marila, Scl. & Salv. P. Z. S. 1876, p. 399[4]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 355[5].

Aythya marila nearctica, Stejneger, Orn. Expl. Kamtsch. 1885, p. 161[6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 53[7].

Supra nigra, nigro alboque minute vermiculata, uropygio et supracaudalibus nigris; pileo et capitis lateribus cum collo superiore oleaceo-viridi nitentibus; primariorum tectricibus et primariis extimis saturate cinerascenti-brunneis, primariis interioribus extus albis, apicem versus fuscioribus; secundariis extimis albis, fusco terminatis, his intimis, scapularibus longioribus et tectricibus majoribus brunnescenti-nigris, tectricibus reliquis saturate brunneis, albo vermiculatis; corpore reliquo subtus albo, abdomine imo nigro marmorato; præpectore nigro; subalaribus et axillaribus albis, marginalibus fusco variegatis; cauda nigricante: rostro pallide plumbeo, apice nigro; pedibus plumbeis; iride flava. Long. tota circa 18·0, alæ 9·3, caudæ 2·9, culm. 1·8, tarsi 1·4. (Descr. maris adulti ex Massachusetts. Mus. nostr.)

♂ *in ptilosi vera æstiva* vix a femina adulta distinguenda.

♀. Supra saturate brunnea, dorso et scapularibus vix albo vermiculatis; capite, collo et præpectore rufescenti-brunneis, pileo antico et mento albis; corpore reliquo subtus albo, abdomine imo et subcaudalibus brunneis, plumis albido terminatis; ala sicut in mari colorata, sed tectricibus alarum vix albo vermiculatis: rostro et pedibus ut in mari picturatis, sed saturatioribus. Long. tota circa 18·0, alæ 8·5, caudæ 2·5, culm. 1·8, tarsi 1·4. (Descr. feminæ adultæ ex Corpus Christi, Texas. Mus. nostr.)

Juv. feminæ adultæ similis, sed saturatius et clarius colorata.

Hab. North America, breeding far north[5 7], extending south in winter.—Mexico, Mazatlan (*Grayson*[2]).—Northern Europe and Asia, from Iceland to Kamtschatka, wintering to the southward.

The Common Scaup of North America has been separated as a distinct race from its European representative; but Count Salvadori considers that there is only one species, *F. marila*, common to the northern portions of the Eastern and Western Hemispheres. It breeds far to the north and wanders south in winter. *F. marila* is said to be found at Mazatlan, in Western Mexico, during the winter months; but as the present species and *F. affinis* have often been confounded by ornithologists, this statement may be considered as somewhat doubtful. A specimen has been recorded from Guatemala, but this was probably referable to *F. affinis*.

The "Blue-bill," as the Scaup is called in America, is found on the inland waters of the United States in winter, when it also frequents the coast in some numbers. The bird feeds chiefly by night, the food consisting of small molluscs and water-plants, which it obtains by diving. The nest is roughly constructed in a hollow in the ground, with a few straws and a little down for lining. The eggs are of a pale olive-grey colour [3].

2. **Fuligula affinis.**

Fuligula affinis, Eyton, Mon. Anat. p. 157 [1]; Scl. & Salv. Ibis, 1859, p. 231 [2]; P. Z. S. 1876, p. 399 [3]; Salv. P. Z. S. 1870, p. 219 [4]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 360 [5].

Fulix affinis, Lawr. Ann. Lyc. N. York, ix. pp. 143 [6], 210 [7]; Mem. Bost. Soc. Nat. Hist. ii. p. 315 [8]; Sumichr. La Nat. v. p. 234 [9]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 22 [10].

Aythya affinis, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174 [11]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 53 [12].

F. marilæ similis, sed minor et fasciis dorsalibus albis magis conspicuis; alis ut in *F. marila* coloratis; tectricibus alarum vix albo vermiculatis; tectricibus primariorum et primariis externis cinerascenti-brunneis, apicem versus nigris, primariis interioribus extus brunnescenti-griseis, intus saturatioribus; pileo et collo purpureo-nigris, collo laterali viridi nitentibus: rostro cyaneo, apice nigro. Long. tota circa 16·0, alæ 8·2, caudæ 2·5, culm. 1·75, tarsi 1·35. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

♀ feminæ *F. marilæ* similis, sed minor, primariis interioribus saturatioribus, cinerascenti-brunneis. Long. tota circa 16·0, alæ 7·3, caudæ 2·5, culm. 1·55, tarsi 1·3. (Descr. feminæ adultæ ex Dueñas. Mus. nostr.)

Hab. North America in general, breeding chiefly north of the United States, migrating south in winter to Central America [5 12].—Mexico, Mazatlan (*Grayson* [8]), Zacatecas (*Richardson* [5]), Orizaba (*Sumichrast* [9]), Epatlan, Puebla (*Ferrari-Perez* [11]), Progreso, Yucatan (*Schott* [7]); Guatemala, Lakes of Dueñas and Atitlan (*O. S.* [2 3]); Costa Rica, San Antonio (*v. Frantzius* [6]); Panama, Castillo, Veraguas (*Arcé* [4]).

The Lesser Scaup is a smaller bird than *F. marila*, which it otherwise resembles in plumage. The two forms have apparently been confounded together by many observers, and Mr. Ridgway considers it not improbable that connecting-links may be discovered, so that *F. affinis* would appear to be nothing but a small race of *F. marila*.

It is found far to the north in summer, extending even to the Arctic Ocean, and breeding generally throughout the Fur Countries and Alaska. On migration the bird occurs all over the United States, frequenting the coast in winter. At this season the Lesser Scaup has been met with at Mazatlan, in Western Mexico [8]; we also obtained numerous specimens on the Lake of Dueñas in Guatemala during the winter, and Salvin noticed it on the Lake of Atitlan as late as the month of May [2].

F. affinis resembles its larger ally in habits and food, and, like it, may frequently be seen in large flocks. The eggs are described as pale greyish-buff, with a tinge of olive [10].

3. Fuligula collaris.

Anas collaris, Donov. Brit. Birds, vi. pl. 147 [1].

Fuligula collaris, Scl. & Salv. Ibis, 1860, p. 277 [2]; P. Z. S. 1876, p. 400 [3]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 370 [4].

Fulix collaris, Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 315 [5]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 25 [6].

Aythya collaris, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174 [7]; Stone, Pr. Acad. Philad. 1890, p. 217 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 53 [9].

Fuligula affinis, Scl. (nec Eyton), P. Z. S. 1859, p. 369 [10].

Fuligula rufitorques, Scl. P. Z. S. 1862, p. 20 [11].

Supra nigra, capite colloque purpureo lavatis, dorso viridi paullulum nitente; tectricibus alarum et remigibus grisescenti-brunneis, primariis intimis fusco terminatis; secundariis extimis griseis, extus albo terminatis, fascia subterminali fusca; secundariis intimis et scapularibus longioribus nigris, paullulum viridi nitentibus; tectricibus majoribus nigricantibus; cauda fuscescenti-nigra; gutture et præpectore nigris, torque collari castaneo; corpore reliquo subtus albo, abdomine et corporis lateribus vix fusco vermiculatis; subcaudalibus nigris; subalaribus cinerascentibus, albo marginatis; axillaribus albis: rostro plumbeo, fascia basali et altera latiore subterminali cyanescenti-albis, apice nigro; pedibus pallide schistaceis. Long. tota circa 17·0, alæ 7·8, caudæ 3·0, culm. 1·9, tarsi 1·45. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

♀ feminæ *F. marilæ* similis, sed pileo et collo brunnescentioribus, minime rufescentibus; alis ut in mari coloratis, speculo alari griseo: rostri fasciis angustioribus et minus distinctis; pedibus schistaceis. Long. tota circa 17·0, alæ 7·2, caudæ 2·5, culm. 1·8, tarsi 1·3. (Descr. feminæ adultæ ex Dueñas. Mus. nostr.)

Hab. North America, breeding far north, migrating south in winter [4 9].—Mexico, Chihuahua, Boca Grande, Janos River (*Dr. Kennerly* [6]), Mazatlan (*Grayson* [3 5]), Rio de Coahuayana (*Xantus* [5]), Lake Patzcuaro (*Baker* [8]), Jalapa (*De Oca* [10]), Lake Chapulco, Puebla (*Ferrari-Perez* [7]), Oaxaca (*Boucard* [11]); Guatemala, Coban, Lake of Dueñas (*O. S.* [2 3 4]).—West Indies [4].

The Ring-necked Scaup is distinguished from the two preceding species by the colour of the speculum, which is bluish-grey, narrowly tipped with white, instead of white, tipped with black; the sides of the body, likewise, are greyish-white, with strongly marked blackish vermiculations. The white chin-spot and the rufous collar on the neck are further distinguishing characteristics.

This species breeds throughout the northern parts of North America from about lat. 44°. It migrates south in winter, and is then found on inland waters, and more sparingly on the coasts. According to Grayson, *F. collaris* occurs in Western Mexico, and he obtained specimens at Mazatlan [5]. It was found by Dr. Kennerly, during the Mexican Boundary Survey, at Boca Grande in Chihuahua, and also on the Janos River, where the bird was seen in large flocks in April [6]. In Guatemala we procured specimens on the Coban River in Vera Paz in November, when the species was noticed in considerable numbers [2 3 4].

The nest is made of dry grasses, slightly lined with down. The eggs are described as being of a greyish-ivory-white, a buffy tinge sometimes replacing the grey [6].

CLANGULA.

Clangula, Leach, in Ross's Voyage Expl. Baffin's Bay, App. p. xlviii (1819); Salvad. Cat. Birds Brit. Mus. xxvii. p. 376 (1895).

The Golden-eyes have a shorter and stouter bill than the species of *Nyroca* and *Fuligula*, the depth of the upper mandible at the base being equal to more than half the length of the culmen, the outline of which is only very slightly concave.

The three known species inhabit the Northern Hemisphere—two, *C. glaucion* and *C. albeola*, occurring in winter within our limits.

1. Clangula glaucion.

Anas glaucion, Linn. Syst. Nat. i. p. 201 [1].

Clangula glaucion, Scl. & Salv. P. Z. S. 1876, p. 401 [2]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 376 [3].

Bucephala americana, Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 315 [4].

Clangula glaucion americana, Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 44 [5].

Glaucionetta clangula americana, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 54 [6].

Clangula clangula, Sharpe, Hand-l. Birds, i. p. 224 [7].

Supra nigra, scapularibus externis albis, harum longioribus nigro marginatis; alis brunnescenti-nigris, tectricibus et secundariis medianis albis, plagam magnam albam formantibus; pileo paullo cristato colloque summo nigris viridi nitentibus; plaga conspicua anteoculari alba; præpectore et corpore subtus reliquo albis, hypochondriis nigro marginatis; abdomine laterali cinerascenti-brunneo, plumis albo terminatis; subalaribus et axillaribus saturate cinerascenti-brunneis; cauda nigricante: rostro cyanescenti-nigro; pedibus aurantiaco-flavis; iride flava. Long. tota circa 18·0, alæ 8·9, caudæ 4·0, culm. 1·4, tarsi 1·45. (Descr. maris adulti ex Canada. Mus. nostr.)

♂ *in ptilosi æstiva feminina* feminæ adultæ similis, sed ala albo notata distinguenda.

♀. Supra nigricans, interscapulio, scapularibus et tectricibus alarum pallide griseo marginatis; tectricibus medianis grisescenti-cinereis, albo terminatis, minime pure albis; capite et collo superiore rufescenti-brunneis, collo imo grisescenti-albo; corpore subtus albo, pectore summo et corporis lateribus grisescentibus: rostro brunnescente vel flavido, apice nigro; pedibus et iride sicut in mari coloratis. Long. tota circa 17·0, alæ 7·7, caudæ 3·4, culm. 1·35, tarsi 1·45. (Descr. feminæ adultæ ex Massachusetts. Mus. nostr.)

Juv. feminæ adultæ similis, sed coloribus sordidioribus distinguenda.

Hab. North America, breeding from Maine and the British Provinces northward [6].—Mexico, Mazatlan (*Grayson* [4]).—Cuba [3 6].—Northern Europe and Northern Asia, breeding in the Arctic and Subarctic Regions, as far south as Pomerania and the Caucasus [3], occurring in winter in Asia Minor, Persia, North-western India, China, and Japan [3].

This species breeds in the northern parts of both hemispheres, and migrates south in winter. The American Golden-eye has been often recorded as distinct from the Palæarctic form, being slightly larger; but Count Salvadori, our greatest authority on the Ducks, does not consider that the two can be separated, even as races.

C. glaucion has been met with in Cuba in winter, and it is said by Grayson to be

common near Mazatlan, in Western Mexico, during the same period. It frequents the bays on the coast in winter, but during the breeding-season is found only on fresh-water lakes and rivers.

This bird, known in many parts of North America as the "Whistler," is recorded as very shy and wary, and is possessed of exceptional diving powers; it is also of very powerful flight. The eggs, which are of a pea-green or greyish-green colour, are laid in stumps or holes of hollow trees, the cavity being lined with the bird's own down.

2. Clangula albeola.

Anas albeola, Linn. Syst. Nat. i. p. 199 [1].

Bucephala albeola, Dugès, La Nat. i. p. 143 [2].

Charitonetta albeola, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 54 [3].

Clangula albeola, Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 48 [4]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 385 [5].

Supra nigra, supracaudalibus grisescentibus; scapularibus externis albis, harum longioribus anguste nigro terminatis; alis sicut in *C. glaucion* coloratis, sed tectricibus marginalibus albo limbatis; rectricibus saturate cinerascenti-brunneis, externis albo marginatis; capite et colli dimidio summo metallice viridibus; pileo, collo laterali et gutture purpurascente nitentibus, plaga magna postoculari alba, usque ad occiput extensa; torque collari albo; corpore reliquo subtus albo: rostro cyanescenti-nigro; pedibus rosaceis, palmis saturatioribus; iride saturate brunnea. Long. tota circa 15·0, alæ 7·0, caudæ 3·5, culm. 1·0, tarsi 1·1. (Descr. maris adulti ex Massachusetts. Mus. nostr.)

♀. Supra brunnescenti-nigra, uropygio nigro, supracaudalibus brunnescentioribus; alis caudaque brunnescenti-nigris, secundariis medianis extus apicem versus albis, speculum alare formantibus; capite et collo saturate brunneis, vix purpureo nitentibus; genis et regione parotica albis, aream longitudinalem albam formantibus: subtus pure alba, præpectore griseo lavato; corporis lateribus, crisso et subcaudalibus brunnescenti-griseis: rostro fusco; pedibus et iride sicut in mari coloratis. Long. tota circa 12·5, alæ 6·0, caudæ 3·0, culm. 1·0, tarsi 1·0. (Descr. feminæ adultæ ex Tarpon Springs, Florida. Mus. nostr.)

Juv. haud a femina adulta distinguenda.

Hab. North America, breeding from Maine and Montana northward through the Fur Countries to Alaska, migrating south in winter [3].—Mexico, Chihuahua (*Kennerly* [4]), Tamaulipas (*Berlandier* [4]), Guanajuato (*Dugès* [2]).—Cuba [3 5].—Accidental in Europe [5].

The Buffle-headed Duck rarely occurs within true Central-American limits, but it has been recorded from Guanajuato by Professor Dugès [2], and is said by Dr. Berlandier to be found in winter in Tamaulipas on the borders of the rivers and marshes in that State [4]. Dr. Kennerly also records that this Duck was found in large flocks at the Boca Grande in Chihuahua, and also at other points on the Conalitos and Janos Rivers [4].

C. albeola is an inhabitant of the Arctic and Subarctic Regions of North America, breeding in the far north in summer. The bird lines the cavity of a tree with its own down for the reception of the eggs, but otherwise makes no nest. Though not at

all shy, this species is difficult to procure, as it dives at the flash of a gun and is extremely rapid in its movements. The food consists of fish, molluscs, freshwater plants, &c. The flesh is much esteemed by some people as an article of food.

Subfam. *ERISMATURINÆ.*

This subfamily comprises the stiff-tailed Diving-Ducks, which are closely allied to the Fuligulinæ, but differ in having the tail-feathers narrow and very rigid, as is pointed out by Count Salvadori.

NOMONYX.

Nomonyx, Ridgway, Pr. U. S. Nat. Mus. iii. p. 15 (1880); Salvad. Cat. Birds Brit. Mus. xxvii. p. 438 (1895).

This genus, represented by a single Tropical-American species, may be distinguished from most of the Diving-Ducks by the narrow tail-feathers, which are also very stiff. From *Erismatura* it differs in having the nail of the bill perpendicular.

1. Nomonyx dominicus.

Anas dominica, Linn. Syst. Nat. i. p. 201 [1].

Erismatura dominicus, Scl. P. Z. S. 1857, p. 206 [2]; 1860, p. 254 [3]; Lawr. Mem. Bost. Soc. Nat. Hist. p. 316 [4]; Scl. & Salv. P. Z. S. 1876, p. 405 [5].

Nomonyx dominicus, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 60 [6]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 438 [7]; Salvad. & Festa, Boll. Mus. Zool. Torino, xiv. no. 339, p. 13 [8].

Supra niger, plumis singulis castaneo late marginatis; alis brunnescenti-nigris, tectricibus majoribus et dimidio externo basali secundariorum extimorum albis, speculum alare formantibus; rectricibus nigris; capite nigro; collo saturate castaneo, pectore pallidiore, abdomine albicanti-fulvo; hypochondriis nigris; maxilla et area nuda oculari cyaneis, illa nigro apicata; mandibula rufescenti-alba, ad apicem nigra; mento nudo nigro; pedibus brunneis, tarso extus et digitis externis saturatioribus. Long. tota circa 15·0, alæ 5·7, caudæ 4·0, culm. 1·25, tarsi 1·15. (Descr. maris adulti ex Peru. Mus. nostr.)

♀. Supra saturate brunneus, fulvo maculatus; alis sicut in mari coloratis, sed tectricibus alarum medianis et majoribus fulvo maculatis; cauda nigricante; pileo et capitis lateribus saturate brunneis; supercilio angusto et fascia latiore lorali ad occiput extensa fulvis; corpore subtus brunneo, plumis singulis fulvo vel albido marginatis, quasi marmoratis; mento et gutture pallide fulvis; collo fulvo, brunneo maculato: rostro brunneo, apice nigro. Long. tota circa 14·0, alæ 5·6, caudæ 3·8, culm. 1·2, tarsi 1·1. (Descr. feminæ adultæ ex Sarayacu, Ecuador. Mus. nostr.)

Juv. feminæ adultæ similis, sed gastræi plumis basaliter pallidioribus.

Hab. North America, Gulf Coast to the Lower Rio Grande; accidental in Wisconsin and on Lake Champlain, Massachusetts [6].—Mexico, Jalapa, Vera Cruz (*Sallé* [2 3]), Tepic (*Grayson* [4]); Guatemala [7]; Panama, Veragua (*Arcé* [5 7]), Laguna de Pita (*Festa* [8]).—Tropical America generally, south to Chile and Argentina [7]; West Indies [7].

The Masked Duck has been recorded from various widely separated localities in

Central America. It is of accidental occurrence in the United States, and is a more strictly Neotropical form than any of the other Diving-Ducks mentioned in the present work. Grayson [4] states that he met with the species in some numbers, frequenting a small lake or lagoon near Tepic in Jalisco, as late as the month of June; the birds were evidently desirous of breeding in that locality, for the ovaries of some of the females shot were enlarged. He did not notice any examples in the neighbourhood of Mazatlan.

According to Léotaud, *N. dominicus* is a social bird in Trinidad, but is essentially a water-loving species. When on land, it sits in an upright position, with its tail resting on the ground. This Duck is an excellent diver, and, when once on the wing, is of rapid flight, but it appears to find some difficulty in sustaining a great speed for any length of time.

ERISMATURA.

Erismatura, Bonap. Saggio Distr. Met. Agg. e Corr. p. 143 (1832); Salvad. Cat. Birds Brit. Mus. xxvii. p. 441 (1895).

A cosmopolitan genus differing from *Nomonyx* chiefly in having the nail of the bill bent inwards. Seven species are known, of which four are Neotropical, but one only of these occurs within our limits.

1. **Erismatura jamaicensis.**

Anas jamaicensis, Gmel. Syst. Nat. i. 2, p. 519 [1].

Erismatura rubida, Scl. P. Z. S. 1859, p. 393 [2]; Scl. & Salv. Ibis, 1859, p. 232 [3]; P. Z. S. 1876, p. 403 [4]; Dugès, La Nat. i. p. 143 [5]; Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 315 [6]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174 [7]; Herrera, La Nat. (2) i. pp. 187, 329 [8]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [9]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 789 [10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 59 [11].

Erismatura ferruginea, v. Frantz. J. f. Orn. 1869, p. 378 [12].

Erismatura jamaicensis, Salvad. Cat. Birds Brit. Mus. xxvii. p. 445 [13].

Castanea, præpectore et pectore summo saturatioribus; corpore reliquo subtus albo, plumis basaliter brunnescenti-griseis; corporis lateribus castaneis; subcaudalibus albis; rectricibus brunnescenti-nigris; ala grisescenti-brunnea, tectricibus alarum et secundariis interioribus vix fulvo vermiculatis; subalaribus albis, axillaribus brunneis, apicem versus albis; pileo nuchaque nigris; collo laterali et gutture castaneis; mento, loris, regione parotica et genis anticis pure albis, plagam albam magnam formantibus: rostro et regione periophthalmica cyaneis; pedibus sordide cinerascenti-cyaneis, palmis fuscis; iride corylina. Long. tota circa 16·0, alæ 6·0, caudæ 3·8, culm. 1·75, tarsi 1·1. (Descr. maris adulti ex Dueñas. Mus. nostr.)

♀. Brunnea, plus minusve fulvo anguste vermiculata; alis et cauda sicut in mari coloratis; pileo brunneo, capitis lateribus et mento albidis, fascia fusca suboculari usque ad regionem paroticam producta; collo brunnescenti-griseo; corpore subtus reliquo sicut in mari colorato, hypochondriis et corporis lateribus fuscis, albo marmoratis et marginatis: rostro fusco. Long. tota circa 16·0, alæ 5·6, caudæ 3·8, culm. 1·5, tarsi 1·1. (Descr. feminæ adultæ ex Dueñas. Mus. nostr.)

♂ *juv.* feminæ adultæ similis, sed fascia fusca faciali absente, genis albicanti-fulvis; subcaudalibus albis.

Hab. North America, from Hudson's Bay southward [11].—Mexico, Pachico, Sonora (*Robinette* [9]), San Luis Potosi (*Jouy* [10]), Mazatlan, Sinaloa, Tepic, Jalisco

(*Grayson* [6]), Aguas Calientes (*Richardson* [13]), Guanajuato (*Dugès* [5]), Valley of Mexico (*Herrera* [8], *Le Strange* [13]), Laguna de Chapulco, Puebla, Jalapa, Vera Cruz (*Ferrari-Perez* [7]), Oaxaca (*Boucard* [2]); GUATEMALA, Dueñas, Lake of Atitlan (*O. S.* [3 4 13]); COSTA RICA, Irazu (*v. Frantzius* [12]).—COLOMBIA [11]; WEST INDIES [11 13].

The Ruddy Duck inhabits the greater portion of North America, and is found breeding throughout the temperate area of that Continent, as well as in Central America. The species also occurs in Colombia, and is believed to breed there. In Mexico, according to Herrera, the native name is "Yacatexoctli." We met with the bird in Guatemala [3], breeding on the Lake of Dueñas, where it was the only resident species of the Anatidæ.

Salvin [3] writes:—"It is more easily procured than any of the other Ducks frequenting the Lake, as its powers of flight render its escape less easy. Not but that it flies as well as any other when once fairly started; but it finds difficulty in rising from off the water, so much so, that, by sailing down-wind towards a bird, it usually admits of approach to within easy shooting-distance. Sometimes, however, it seeks safety by diving; and when such is the case, its powers in this respect are so great that escape is almost certain to ensue. It builds in May, amongst the reeds on the margin of the Lake, making a nest of the dead flag with a little down." The eggs are rough in texture, of a dirty creamy-white colour.

Subfam. *MERGINÆ*.

The Mergansers, which are the representatives of this subfamily, are northern birds which reach Central America only in winter. They differ from the other Diving-Ducks noticed here in their narrower and more compressed bills, which are remarkable for the tooth-like serrations along the edges of the mandibles.

MERGANSER.

Merganser, Briss. Orn. vi. p. 230 (1760); Salvad. Cat. Birds Brit. Mus. xxvii. p. 471 (1895).

The true Mergansers may be distinguished from *Lophodytes* by the conspicuous tooth-like serrations of both mandibles. The genus is a cosmopolitan one, and though represented by seven species—three of which have a northern habitat—resident forms are found within the tropics, of which *M. brasilianus* is an example. One species only, *M. americanus*, visits Central America in winter.

1. **Merganser americanus.**

Mergus americanus, Cass. Pr. Acad. Philad. 1853, p. 187 [1]; Allen, Bull. Amer. Mus. N. H. v. p. 32 [2]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 47 [3]; Salvadori, Cat. Birds Brit. Mus. xxvii. p. 477 [4].

Interscapulio et scapularibus elongatis nigris; dorso toto, uropygio et supracaudalibus cinereis; tectricibus marginalibus nigris, majoribus quoque basaliter nigris; tectricibus primariorum et primariis nigricantibus;

secundariis albis, interioribus anguste nigro limbatis; rectricibus grisescenti-brunneis; pileo cristato, cum nucha, facie laterali et gutture toto nigris viridi nitentibus; corpore reliquo subtus pure albo; axillaribus et subalaribus albis, his marginalibus griseo-brunneis: rostro miniato, culmine et apice nigris; pedibus coccineis; iride coccinea. Long. tota circa 25·0, alæ 10·0, caudæ 4·6, culm. 2·15, tarsi 2·0. (Descr. maris adulti ex Vancouver Island. Mus. nostr.)

♀. Supra griseus, plumis medialiter fuscescentibus; tectricibus alarum quoque griseis, majoribus albis ad basin nigris; remigibus sicut in mari coloratis, sed secundariis intimis griseis dorso concoloribus; capite cristato, facie laterali et collo superiore undique castaneis, pileo fuscescentiore; genis anticis et gutture superiore et mediano albidis; corpore reliquo subtus albo, colli et præpectoris lateribus griseo marmoratis: rostro et pedibus sicut in mari coloratis, sed sordidioribus. Long. tota circa 25·0, alæ 10·0, caudæ 4·6, culm. 2·15, tarsi 2·0. (Descr. feminæ adultæ ex Vancouver Island. Mus. nostr.)

Hab. North America generally.—Mexico, ? Sonora (*Robinette* [2]).—Bermuda [3].

The American Goosander, known also as the "Buff-breasted Sheldrake" of American writers, is found over the whole continent of North America, breeding in Pennsylvania, Colorado, California, &c., and ranging in winter to Mexico. Here it was met with by Mr. Robinette, probably in Sonora, but as the labels of his specimens have been lost, the exact locality remains uncertain [2].

M. americanus is an expert diver and feeds almost entirely on fish. When on migration, the Goosander assembles in large flocks, both in autumn and spring, and as it visits the Pacific coast as far as Southern California it is quite possible that the species will be found off the coast of Western Mexico.

The Red-breasted Merganser (*M. serrator*) may also occur in winter on the coasts of Central America; and as the females of the two species are similar in colour, it may be well to mention that the last-named bird is smaller than the Goosander, as pointed out by Mr. Ridgway; *M. serrator* may further be distinguished by the position of the nostril, which is situated near the base, and not in the middle, of the maxilla.

LOPHODYTES.

Lophodytes, Reichenb. Av. Syst. Nat. p. ix (1852); Salvad. Cat. Birds Brit. Mus. xxvii. p. 468 (1895).

The long, compressed, subcylindrical bill serves to distinguish this genus from all the Ducks previously mentioned; and the short blunt serration of both mandibles also separates it from *Merganser*. The tail and the tarsus are proportionately longer than in the last-named genus, and the form of the crest is quite different from that of the Mergansers, being much more full and forming a kind of hood.

Only one species is known, *L. cucullatus*, which breeds in the Arctic regions of America and comes south in winter, when it has been known to occur in Mexico. It wanders occasionally to Europe.

1. Lophodytes cucullatus.

Mergus cucullatus, Linn. Syst. Nat. i. p. 207 [1]; Scl. & Salv. P. Z. S. 1876, p. 409 [2]; Sumichr. La Nat. v. p. 234 [3].

Lophodytes cucullatus, Scl. P. Z. S. 1859, p. 369[4]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. ii. p. 121[5]; Herrera, La Nat. (2) i. pp. 187, 328[6]; A. O. U. Check-l. N.-Amer. Birds, 2nd ed. p. 48[7]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 468[8].

Supra nigerrimus, interscapulio, uropygio laterali et supracaudalibus nigricanti-brunneis; tectricibus alarum cano-griseis, primariis brunneis, tectricibus majoribus nigris albo terminatis; secundariis intimis albo extus marginatis, longioribus medialiter albo striatis; rectricibus brunneis, anguste albido terminatis; pileo valde cristato nigro, cristæ posticæ plumis albis, nigro terminatis; capitis lateribus posticis quoque albis, plagam albam magnam formantibus; collo undique et gutture nigris; torque collari interrupto albo, plumis nigris albo marginatis; præpectore laterali fascia nigra ornata, altera inferiore alba, plumis nigro terminatis; corpore reliquo subtus albo, lateribus et hypochondriis vinaceo-rufescentibus, nigro anguste transfasciatis; subcaudalibus sordide albis, brunneo vermiculatis; subalaribus albis, externis brunneis; axillaribus pure albis; alis subtus griseis: rostro nigro; pedibus flavescenti-brunneis; iride læte flava. Long. tota circa 18·5, alæ 7·5, caudæ 4·0, culm. 1·6, tarsi 1·25. (Descr. maris adulti ex Tarpon Springs, Florida. Mus. nostr.)

♀ *ad.* Supra nigricans, pileo, collo et interscapulio saturate cinerascenti-brunneis; capitis lateribus pallide cinereis; crista rufescenti-brunnea, apicem versus pallidiore; mento gulaque rufescenti-brunneis; præpectore, corporis lateribus et hypochondriis saturate cinerascenti-brunneis, plumis pallide marginatis; corpore reliquo subtus pure albo, subcaudalibus longioribus brunneis albo marmoratis; alis caudaque sicut in mari coloratis; maxilla nigra, marginibus ejus et mandibula aurantiacis; pedibus fuscis; iride corylina. Long. tota circa 18·0, alæ 7·6, caudæ 4·0, culm. 1·55, tarsi 1·25. (Descr. maris adulti ex Jalapa. Mus. nostr.)

Hab. North America generally, breeding nearly throughout its range[7].—Mexico, Rio Bravo del Norte near Matamoros (*Berlandier*[5]), Valley of Mexico (*Herrera*[6]), Jalapa (*De Oca*[4]), Orizaba (*Sumichrast*[3]).—Europe, casual[7].

L. cucullatus is confined to North America, wintering in the Southern United States and migrating in summer to the wooded regions of the north, where it breeds. It has been observed several times in Mexico.

In habits the species resembles its larger relatives. It subsists on fish, and its powers of diving are extraordinary. The Hooded Merganser is said to be a very wary bird and to have a remarkably swift flight. The nest is always placed in a hollow tree, and the cavity is lined with fine dry grass, leaves, and down.

Order COLUMBÆ*.

The Pigeons are cosmopolitan, and form a large Order of birds, comprising nearly six hundred species. In all recent schemes of classification the Order Columbæ has been placed in the vicinity of the Gallinæ or Game-Birds, to which some of the Ground-Pigeons, such as *Otidiphaps* and *Goura* of New Guinea, show much affinity.

The Columbæ are schizognathous birds, with schizorhinal nostrils and basipterygoid processes in the skull. The bill is characteristic, the tip being hard and swollen, and the basal portion covered with a soft skin, in which the nostrils, overhung by an

* As with the Herons and some of the other Orders, I have been assisted in my description of the Pigeons by my friend Dr. Bowdler Sharpe.—*F. D. G.*

incumbent valve, open (*Salvadori*). There are also many characters, anatomical and pterylographical, distinguishing the Order, which is a sufficiently natural one, familiar to all ornithologists. The classification here adopted is that of Count Salvadori in the twenty-first volume of the 'Catalogue of Birds.' With the exception of the genus *Columba*, which is represented in the Old World also, the other genera recorded in this work are strictly confined to the American region.

Fam. COLUMBIDÆ.

The Columbidæ are divided by Count Salvadori into three subfamilies — the Columbinæ, or true Pigeons, common to both the Old and New Worlds; the Macropygiinæ, or Barred Doves, confined to Australia and the oriental regions of the Old World; and the Ectopistinæ, or Passenger-Pigeons, which are peculiar to America.

All the species of this family have an abbreviated tarsus, which is usually shorter than the middle toe.

Subfam. *COLUMBINÆ*.

The characters of this subfamily are practically the same as those of the family, with the exception that in the true Pigeons the tail is square and of moderate length, not exceeding that of the wings, whereas in the Macropygiinæ and the Ectopistinæ it is graduated and considerably exceeds their length.

COLUMBA.

Columba, Linn. Syst. Nat. i. p. 279 (1766); Salvad. Cat. Birds Brit. Mus. xxi. p. 241 (1893).

In this genus the tarsus is shorter than the lateral toes and is slightly feathered on the upper part, but never for more than half its length. *Columba* includes the well-known European Wood- and Rock-Pigeons, and other remarkable forms inhabiting the New World.

About sixty species are known, and the genus is universally distributed. The nest is usually placed in trees, and consists of a frail platform of sticks and bents. The eggs are white and two in number, though some species, like *C. flavirostris*, lay but one.

1. Columba leucocephala.

Columba minor capite albo, Sloane, Hist. Jamaica, ii. p. 303, t. 261. f. 2[1].

Columba leucocephala, Linn. Syst. Nat. i. p. 281[2]; Temm. & Knip, Pig. i. (2) t. 13[3]; Moore, P. Z. S. 1859, p. 61[4]; Scl. & Salv. Ibis, 1859, p. 222[5]; Salv. Ibis, 1864, pp. 374[6], 380[7], 383[8]; 1885, p. 193[9]; 1889, p. 377[10]; Cory, Birds Bahama Is. p. 137[11]; Birds W. Indies, p. 209[12]; Bendire, Life Hist. N. Am. Birds, p. 131, t. 4. fig. 4[13]; Ridgw. Pr. U. S. Nat. Mus. x. p. 577[14]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 120[15]; Salvad. Cat. Birds Brit. Mus. xxi. p. 278[16].

Plumbea; cervice postica nitide ænea, plumis omnibus nigro limbatis; nucha purpureo-nigra; capite summo niveo: subtus paulo pallidior: rostro nigricante, apice flavo; pedibus carneis. Long. tota circa 12·5, alæ 7·5, caudæ 4·8, rostri a rictu 1·15, tarsi 1·2.

♀. Fuscescentior; cervice postica nitide lutescente, plumis sicut in mari marginatis; capite summo fusco lavato: subtus plumbeo-fusca, abdomine pallidiore. (Descr. maris et feminæ ex Glover's Reef, British Honduras. Mus. nostr.)

Hab. North America, Florida Cays [15].—Mexico, Cozumel I. off the coast of Yucatan (*Gaumer* [9 10]); British Honduras, small islands off the coast (*Leyland* [5]), Turneff, Glover's Reef, Half-Moon Cay, Middle Cay (*O. S.* [6 7 8]); Honduras, Ruatan I. (*Gaumer* [10]).—Greater Antilles [1]; Bahama Is. [11]; Virgin Is. and St. Bartholomew [16]; Swan I. [14].

The White-crowned Pigeon breeds on the Florida Cays, arriving early in May and leaving in November; it also nests in the Bahamas and the Greater Antilles, and probably on the islands off the coast of Honduras. Leyland observed a flock of these birds between Omoa and Belize, flying from island to island, but he did not notice them on the mainland [4]. Salvin also found many on the cays of British Honduras [6 7 8]. This Pigeon frequents the woods, and is common in the high trees surrounding the cenotes or water-holes [9].

The species breeds in communities, and Audubon believed that several broods were reared every year. The nest is usually placed on cactus-bushes, or on the mangroves close to the water; but occasionally they are high up in the trees and are lined with roots and grass. The eggs, two in number, are more glossy than those of most Pigeons [13].

2. **Columba speciosa.**

Pigeon ramier de Cayenne, d'Aub. Pl. Enl. 213 [1].

Columba speciosa, Gm. Syst. Nat. i. p. 783 [2]; Scl. & Salv. Ibis, 1859, p. 222 [3]; Salv. P. Z. S. 1870, p. 217 [4]; Salvad. Cat. Birds Brit. Mus. xxi. p. 281 [5]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 523 [6]; Bangs, Pr. New Engl. Zool. Club, iii. p. 23 [7].

Chlorœnas speciosa, Scl. P. Z. S. 1856, p. 309 [8].

Lepidœnas speciosa, Moore, P. Z. S. 1859, p. 61 [9]; Lawr. Ann. Lyc. N. Y. vii. p. 301 [10]; Sumichrast, La Nat. v. p. 231 [11].

Supra castanea, capite summo obscuriore; dorsi antici plumis singulis macula triangulari subterminali rufa et margine lato æneo ornatis, omnibus rosaceo micantibus; plumis cervicis postici eodem modo maculis albis notatis; gastræi plumis undique late marginatis, iis cervicis anticæ et pectoris maculis albidis subterminalibus ornatis, omnibus rosaceo suffusis; abdomine rufescenti-albido, tectricibus subcaudalibus fere albis; alis rufescenti-fuscis; cauda nigricante: rostro miniato; pedibus griseo-carneis; iride brunnea. Long. tota circa 12·0, alæ 7·3, caudæ 4·7, rostri a rictu 1·1, tarsi 1·0. (Descr. maris ex Sakluk, Peten, Guatemala. Mus. nostr.)

♀ mari similis, sed brunnea, coloribus cervicis et pectoris minus nitidis, interscapulio alis concolore minime castaneo distinguenda. (Descr. feminæ ex Tizimin, Yucatan. Mus. nostr.)

Hab. Mexico, Vera Cruz (*Mus. Brit.* [5]), Cordova (*Sallé* [8]), San Lorenzo (*Ferrari-Perez* [5]), Potrero (*Sumichrast* [11]), Tizimin in N. Yucatan (*Gaumer* [5]); Guatemala, Sakluk (*O. S.* [5]), Lake Peten (*Leyland* [3 9]); Nicaragua, La Libertad (*Richardson* [5]), Rio

Escondido (*Richmond* [6]); Costa Rica, Buenos Aires (*Underwood, in litt.*); Panama [10], Lion Hill Station (*M'Leannan* [5]), Volcan de Chiriqui [5], Bugaba (*Arcé* [4 5]), Boquete (*Brown* [7]). — South America generally, from Colombia to Guiana, Amazonia, Brazil, and Peru [5].

Like *C. leucocephala*, this species belongs to a section of the genus in which the feathers of the nape show prominent dark markings, but in *C. speciosa* there is a complete circle, giving the neck a scaly appearance.

This Pigeon has a wide distribution in South America, and is found in most of the Central-American States. It doubtless breeds throughout its range, as Mr. Richmond records the capture of a young bird in first plumage on the Escondido River, and near Peten Leyland found it domesticated and very tame.

3. **Columba flavirostris.**

Columba flavirostris, Wagl. Isis, 1831, p. 519 [1]; Baird, Mex. Bound. Surv., Birds, p. 21, t. 33 [2]; Scl. P. Z. S. 1859, pp. 369 [3], 391 [4]; 1864, p. 178 [5]; Taylor, Ibis, 1860, p. 226 [6]; Dresser, Ibis, 1866, p. 23 [7]; Lawr. Mem. Bost. Soc. N. H. ii. p. 304 [8]; Bull. U. S. Nat. Mus. no. 4, p. 44 [9]; Sumichr. La Nat. v. p. 231 [10]; Salv. P. Z. S. 1883, p. 428 [11]; Boucard, P. Z. S. 1883, p. 458 [12]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [13]; Stone, Pr. Ac. Phil. 1890, p. 204 [14]; Bendire, Life Hist. N. Amer. Birds, p. 128 [15]; A. O. U. Check-l. N. Am. Birds, 2nd ed. p. 120 [16]; Chapman, Bull. Amer. Mus. N. H. viii. p. 287 [17]; Salvad. Cat. Birds Brit. Mus. xxi. p. 285 [18].

Chlorœnas flavirostris, Scl. P. Z. S. 1856, p. 309 [19]; Salv. Ibis, 1861, p. 355 [20]; Lawr. Ann. Lyc. N. Y. ix. p. 134 [21]; v. Frantz. J. f. Orn. 1869, p. 370 [22].

Columba erythrina, Licht. Nomencl. Mus. Berol. p. 81 [23]; Ridgw. Pr. U. S. Nat. Mus. iii. p. 9 [24]; Nutting, Pr. U. S. Nat. Mus. vi. p. 395 [25].

Supra griseo-fusca, dorso imo et uropygio schistaceis; capite, cervice, pectore et abdomine summo vinaceo-castaneis; mento albido; tectricibus alarum majoribus, abdomine imo, tectricibus subcaudalibus et hypochondriis schistaceis; tectricibus alarum minoribus castaneis haud vinaceo tinctis; remigibus fuscis, stricte albo limbatis; cauda tota nigricanti-plumbea: rostro et pedibus carneo-rubris. Long. tota circa 13·0, alæ 7·8, caudæ 5·0, rostri a rictu 1·0, tarsi 1·0. (Descr. maris ex Salina Cruz, Mexico. Mus. nostr.)

♀ mari similis.

Hab. North America, southern border of the United States from Arizona and the Rio Grande Valley [16]. — Mexico (*Wagler* [1]), Matamoros (*Dresser* [7]), Nuevo Leon, Las Escobas, Santa Ingracia, Los Treviños, Villa Grande, Monte Morelos (*Armstrong* [18]), Aldama, Tampico, Tamaulipas, Santiago, San Blas, Tepic, Salina Cruz, Tehuantepec (*Richardson* [18]), Sierra de Alamos, Sonora, El Toro, Sinaloa (*Lloyd* [18]), Mazatlan (*Xantus* [18], *Grayson* [8 9]), Presidio (*Forrer* [18]), Sierra Madre (*Xantus* [8 9]), Acapulco (*Markham* [11]), Valley of Mexico (*White* [5]), Jalapa (*de Oca* [3]), Vega del Cazadero, Vera Cruz (*Trujillo* [18]), Misantla (*F. D. G.* [18]), Atoyac, Vera Cruz (*Mrs. H. H. Smith* [18]), Cordova (*Sallé* [19], *Sumichrast* [10]), San Lorenzo near Cordova [18], Rio Rancho Nuevo, Plan del Rio, Hacienda de Tortugas, Alvarado (*Ferrari-Perez*), Orizaba, Potrero, Tapana, Santa Efigenia, Tonala, Gineta Mts.,

Tapanatepec (*Sumichrast* [8 10]), Teotalcingo, Oaxaca (*Boucard* [4]), Buctzotz, N. Yucatan (*Gaumer* [18]), Tunkas (*Stone & Baker* [14]), Chichén-Itzá (*Chapman* [17]); Guatemala, Escuintla (*Fraser* [18]), Retalhuleu (*Richardson* [18]), Volcan de Fuego, Zapote (*O. S.* [18]); Honduras, Tigré I. (*Taylor* [6]); Salvador, Volcan de San Miguel (*Richardson* [18]); Nicaragua, Ometépe I., Lake of Nicaragua (*Nutting* [25]), La Libertad in Chontales (*Richardson* [18]); Costa Rica (*Frantzius* [22], *Carmiol* [18]), Dota, Cartago, Turrialba, El Zarcero de Alajuela (*Zeledon* [13 18]), Barranca (*Carmiol* [21]), Laguna de Coris, Tambor, Cuadros de Irazu, Tres Rios, Sarchi, Candelaria (*Underwood, in litt.*).

The Red-billed Pigeon is a summer visitor to Southern Texas, where it breeds abundantly in the valley of the Rio Grande [15]: it has been observed from the end of January till late in November, and some birds probably remain throughout the year. Specimens obtained at Graham Mountain, in Southern Arizona, in July, a locality about ninety miles distant from the Mexican border, indicate that the species nests there also. *C. flavirostris* is found all over Mexico, and probably breeds throughout its Central-American range.

Sumichrast speaks of it as always perching on the highest trees, and Grayson says that he found specimens at Mazatlan, on the western slopes of the Sierra Madre, feeding upon acorns, which are abundant at certain seasons.

C. flavirostris chiefly inhabits forest-districts, but sometimes nests in the vicinity of habitations, and even consorts with tame Pigeons, as observed by Dr. Finley, near Hidalgo, in Texas [15]. The nest is, according to Mr. Sennett, rather differently placed to that of most Pigeons, being built on a large branch close to the trunk of the tree, and composed of sticks and grasses [15]. Other observers, quoted by Bendire [15] in his 'Life-Histories,' describe the nest as a frail structure of sticks, similar to that of most Pigeons. Only one egg is laid, but the birds are said to breed several times in a season, and to be very assiduous and devoted parents, both male and female taking their share in the duties of incubation. The call-note is a particularly loud *coo* [17].

4. Columba madrensis.

Columba flavirostris (nec Wagler), Grayson, P. Bost. Soc. N. H. xiv. p. 274 [1]; Lawr. Mem. Bost. Soc. N. H. ii. p. 304 [2]; Salvad. Cat. Birds Brit. Mus. xxi. p. 285 (pt.) [3].

Columba flavirostris madrensis, Nelson, Pr. Biol. Soc. Washington, xii. p. 6 [4]; N. Amer. Fauna, no. 14, p. 35 [5].

Columba madrensis, Sharpe, Hand-list of Birds, i. p. 70 [6].

C. flavirostri similis, sed marginibus tectricum alarum albis paullo latioribus distinguenda. Long. tota circa 12·5, alæ 8·1, caudæ 4·75, culm. 1·1, tarsi 1·05.

♀ mari similis. Long. tota circa 12·5, alæ 8·0. (Descr. maris et feminæ ex Insulis Tres Marias dictis. Mus. nostr.)

Hab. W. Mexico, Tres Marias Is. (*Grayson* [1 2], *Forrer* [3], *Nelson* [4]).

Mr. Nelson was the first to point out the differences of the Red-billed Pigeon of

the Tres Marias Islands from the ordinary *C. flavirostris* of the mainland of Mexico. The peculiarity in colour claimed for the insular form is not apparent when a large series of the true *C. flavirostris* is compared with birds from the Tres Marias; but the latter have a slightly broader white margin to the greater wing-coverts, which renders them worthy of recognition. *C. madrensis* is said to be common on Maria Madre and Maria Magdalena, ranging to the summits of these islands, and is probably found on Maria Cleofa also. On Maria Madre these handsome birds were most numerous along the wooded sides of a cañon at some distance from the coast. Early in the morning they might be found among the smaller trees at the base of the foot-hills near the settlement, but later in the day they retired further inland to the more heavily forested slopes, perching on the higher branches of the trees, or flying about in twos or threes. At Maria Magdalena numbers were observed in some trees near a group of deserted houses and in old clearings a short distance from the shore, coming there to feed upon the ripening fruit, but if startled they would take wing, making a loud flapping noise that alarmed their companions, and then all dashed swiftly away. Wild figs and the small fruit of a tree, probably a species of *Psidium*, or wild guava, were favourite articles of food. Their loud cooing note is uttered at short intervals and is one of the characteristic sounds in the forests they frequent. The species is essentially arboreal in its habits and is rarely seen near the ground.

5. Columba rufina.

Columba rufina, Temm. & Knip, Pig. i. (2) p. 59, t. 24[1]; Scl. & Salv. Ibis, 1859, p. 222[2]; P. Z. S. 1864, p. 370[3]; 1870, p. 838[4]; Salv. P. Z. S. 1867, p. 159[5]; 1870, p. 217[6]; Ibis, 1870, p. 115[7]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127[8]; Salvad. Cat. Birds Brit. Mus. xxi. p. 287[9]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 523[10]; Underwood, Ibis, 1896, p. 447[11]; Bangs, Auk, xviii. p. 358[12].

Chlorœnas rufina, Scl. P. Z. S. 1856, p. 143[13]; Lawr. Ann. Lyc. N. Y. vii. p. 333[14]; Cassin, Pr. Ac. Phil. 1860, p. 194[15].

Supra fusca, dorso summo et cervice postica rufescentibus micanti-purpureo lavatis; capite summo et nucha schistaceis rosaceo-æneo micantibus; fronte et pectore vinaceis, capitis lateribus schistaceis, gula albicante, uropygio et hypochondriis schistaceis; abdomine albicante; tectricibus subcaudalibus albis; alis et cauda fuscis, illis albido stricte marginatis: rostro nigro; pedibus carneis. Long. tota circa 13·0, alæ 7·1, caudæ 4·8, rostri a rictu 0·9, tarsi 0·9. (Descr. maris ex Bugaba, Panama. Mus. nostr.)

♀ mari similis.

Hab. British Honduras (*Blancaneaux*[9]); Guatemala, Rio Dulce[2], Sayuchil (*O. S.*), Cubilguitz (*O. S. & F. D. G.*[9]); Honduras, San Pedro (*Whitely*[4 9]); Nicaragua, Rio Escondido (*Richmond*[10]); Costa Rica[7] (*Carmiol*[9]), Talamanca (*Zeledon*[8]), Miravalles (*Underwood*[11]); Panama[3], Divala, Chiriqui (*Brown*[12]), Boquete (*Bridges*[13]), Bugaba[6 9], Cordillera de Tolé[5 9], Chitra[6], Calovevora[6] (*Arcé*), Lion Hill (*M'Leannan*[9 11]), Coiba I. (*Batty, in mus. Rothschild*).—Colombia[9]; Ecuador[9]; Guiana[9]; Brazil[9].

This species, according to Count Salvadori, belongs to a section of the genus *Columba* in which the upper wing-coverts are unspotted and the feathers of the nape have no dark margins; the head and neck are not uniformly vinaceous, as in *C. flavirostris*, and there is a metallic-bronze patch on the occiput and the back of the upper part of the neck. These are the chief characters which distinguish *C. rufina* from the other Pigeons of Central America.

Salvin first met with *C. rufina* in Guatemala in December, 1858, on the Rio Dulce, and at that time this was the most northern habitat recorded for it. Since then specimens have been obtained at San Pedro in Honduras, and in various other localities in Central America as given above. On the Volcano of Miravalles Mr. Underwood found it to be one of the most abundant Pigeons of the district. Bridges met with the species in the dense forests of the "Boquete," on the slope of the Volcano of Chiriqui, and it was also found by Mr. Brown in the low-lying districts bordering the Pacific.

6. **Columba fasciata.**

Columba fasciata, Say, in Long's Exp. ii. p. 10 (1823)[1]; Scl. P. Z. S. 1859, p. 369[2]; Scl. & Salv. Ibis, 1860, p. 276[3]; Baird, Brewer, & Ridgw. N. Am. Birds, iii. p. 360[4]; Lawr. Mem. Bost. Soc. N. H. ii. p. 304[5]; Herrera, An. Mus. Nac. Mex. i. p. 104[6]; Sumichrast, La Nat. v. p. 231[7]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174[8]; Salv. & Godm. Ibis, 1892, p. 328[9]; Bendire, Life Hist. N. Am. Birds, p. 122[10]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 789[11]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 119[12]; Salvad. Cat. Birds Brit. Mus. xxi. p. 291[13].

Chlorœnas fasciata, Scl. P. Z. S. 1856, p. 309[14]; 1858, p. 305[15]; Sumichrast, Mem. Bost. Soc. N. H. i. p. 562[16]; Dugès, La Nat. i. p. 141[17].

Columba monilis, Vigors, Zool. Beechey's Voy. p. 26, t. 10[18].

Supra griseo-fusca, uropygio et tectricibus supracaudalibus cinereo-plumbeis, cervice postica æneo micante, semitorque cervicali postico albo; capite summo, nucha et corpore subtus vinaceis, gula et capitis lateribus magis cinereis; abdomine medio et tectricibus subcaudalibus albicantioribus, hypochondriis cinereis; alis fuscis, secundariis vix albido marginatis, tectricibus minoribus dorso, tectricibus majoribus uropygio concoloribus; caudæ dimidio proximo cinereo-plumbeo, fascia transversa mediana nigra, dimidio distali pallide cinereo: rostro flavo, apice nigro; pedibus carneis. Long. tota circa 15·0, alæ 8·3, caudæ 6·0, rostri a rictu 1·0, tarsi 0·95. (Descr. exempl. ex Jalapa, Mexico. Mus. nostr.)

♀ mari similis.

Av. juv. colorem postcervicalem æneum atque semitorquem postcervicalem album caret.

Hab. North America, Western States from the Rocky Mountains to the Pacific coast, north to Washington and British Columbia[12].—Mexico, Sonora (*Herrera*[6]), Nogales (*Jouy*[11]), Nuevo Leon, Guanajuato (*Herrera*[6], *Dugès*[17]), Mazatlan (*Grayson*[5]), Sierra de San Luis Potosi, Sierra de Jerez, Tepic, Sierra de Bolaños, Sierra Nevada de Colima (*Richardson*[13]), Sierra Madre[10] to the Sierra de Colima (*Lloyd*[10]), Alpine region of Vera Cruz (*Sumichrast*[16]), Jalapa (*de Oca*[2 13]), Las Vigas, Puebla, San Miguel Molino (*Ferrari-Perez*[8 13]), Oaxaca (*Boucard*[15]), Cordova (*Sallé*[14]); Guatemala, Coban[3 13], Volcan de Fuego[3 13] (*O. S. & F. D. G.*),

Toliman (*Richardson* [13]); NICARAGUA, Matagalpa, San Rafael del Norte (*Richardson* [13]).

The Band-tailed Pigeon is resident in Arizona, New Mexico, and North-western Texas; but in the Pacific States of North America and British Columbia it is a summer visitor only, and it is of irregular occurrence in the States eastward of the Rocky Mountains.

In Mexico the species is widely distributed in the mountain-districts, and we found it at Coban, and on the Volcan de Fuego in Guatemala at an elevation of about 6000 feet. It does not appear to have been recorded from farther south than Nicaragua.

The nest, built of twigs, is usually placed on branches of oak-trees, but is said to be occasionally found upon the ground. In Arizona but one egg is laid, while in Mexico there are usually two. The food consists of berries and acorns, and the presence of oak-forests widely affects the distribution of the species, since where acorns exist *C. fasciata* congregates in thousands.

7. Columba crissalis.

Chlorœnas albilinea (nec Gray), Lawr. Ann. Lyc. N. Y. ix. p. 135 [1]; Cab. J. f. Orn. 1869, p. 211 [2]; v. Frantz. J. f. Orn. 1869, p. 370 [3].

Columba albilinea, Salv. P. Z. S. 1870, p. 217 [4]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [5]; Cherrie, Auk, 1892, p. 328 [6].

Columba albilineata, Boucard, P. Z. S. 1878, p. 43 [7]; Nutting, Pr. U. S. Nat. Mus. v. p. 498 [8].

Columba crissalis, Salvad. Cat. Birds Brit. Mus. xxi. pp. 245, 294 [9].

Columba albilinea crissalis, Bangs, Pr. New Engl. Zool. Club, iii. p. 23 [10].

C. fasciatæ similis, sed undique obscurior, tectricibus alarum majoribus et minoribus dorso nec uropygio concoloribus. (Descr. maris exempl. typ. ex Rancho Redondo, Costa Rica. Mus. nostr.)

Hab. COSTA RICA [1], Rancho Redondo [9] (*Carmiol*), Mojon, San Juan (*v. Frantzius* [3]), Volcan de Irazu (*Boucard* [7], *Cherrie* [6]), Cot (*Nutting* [8]), San José, Alajuela (*Zeledon* [5], *Cherrie* [6]), La Carpentera, El Berilla, El Salitrillo, Tres Rios, Azahar de Cartago, Estrella, Cedral de Candelaria, Carrillo (*Underwood, in litt.*); PANAMA, Volcan de Chiriqui, Chitra, Boquete de Chitra, Calovevora, Calobre (*Arcé* [4 9], *Brown* [10]).

This Pigeon differs from *C. fasciata* in having the anterior upper wing-coverts dark grey, being uniform with the scapulars. In this respect *C. crissalis* resembles *C. albilinea* of Colombia and Ecuador, but the abdomen and under tail-coverts are whitish (instead of dark) grey [9].

C. crissalis is confined to Central America, and is found from Costa Rica to Panama. In the former country it is by no means plentiful on the low ground, and but a single specimen was obtained by Mr. Nutting near Cot [8]. Mr. Cherrie [6] records the species as not uncommon on the summit of the Volcano of Irazu, at 13,000 feet, and M. Boucard [7] met with it at a lower altitude in flocks of ten or twelve, feeding upon seeds and coming from all directions to drink at a spring of mineral water near Desamparados [7].

8. Columba nigrirostris.

Columba nigrirostris, Scl. P. Z. S. 1859, p. 390[1]; Scl. & Salv. P. Z. S. 1864, p. 370[2]; 1867, p. 280[3]; Salv. Ibis, 1866, p. 206[4]; P. Z. S. 1870, p. 217[5]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127[6]; Ridgw. Pr. U. S. Nat. Mus. x. p. 594[7]; Salvad. Cat. Birds Brit. Mus. xxi. p 322[8]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 522[9]; Bangs, Auk, xviii. p. 358[10].

Chlorœnas nigrirostris, Frantz. J. f. Orn. 1869, p. 371[11]; Salv. Ibis, 1874, p. 455[12].

Chlorœnas vinacea, Lawr. (nec Temm.), Ann. Lyc. N. Y. vii. p. 333[13].

Columba —— ?, Scl. & Salv. 1860, p. 402[14].

Supra olivascenti-fusca, purpureo vix tincto, capite et collo postico vinaceo-purpureis; capitis lateribus et corpore toto subtus pallidiore vinaceis, gula albicantiore; tectricibus subalaribus et remigibus intus cinnamomeis: rostro nigro; pedibus carneo-rubidis; iride vinacea. Long. tota circa 11·0, alæ 6·5, caudæ 4·2, rostri a rictu 0·9, tarsi 0·9. (Descr. maris ex La Lana, Mexico. Mus. nostr.)

♀ mari similis.

Hab. Mexico, Oaxaca[1], La Lana (*Boucard*); British Honduras, vicinity of Belize (*Blancaneaux*[8]); Guatemala, hot region of Vera Paz, Choctum[4 14] (*O. S. & F. D. G.*); Honduras, Segovia River (*Townsend*[7]); Nicaragua, Rio Escondido (*Richmond*[9]), Blewfields (*Wickham*[3]); Costa Rica (*v. Frantzius*[11]), Turrialba (*Arcé*[8]), Talamanca (*Zeledon*[6]), Rio Matina, Naranjo de Cartago, Trojas, Reventazon, Pozo Pital, Sipurio, Sarchi de Grecia, Juan Vinas, Guayabal (*Underwood, in litt.*); Panama, Divala, Chiriqui (*Brown*[10]), Bugaba (*Arcé*[5]), Lion Hill (*M'Leannan*[8 13]).

This and the following species belong to a section of the genus *Columba* in which the plumage is of an almost uniform vinous brown, with scarcely any spots or markings, beyond a few reddish ones on the back of the neck, and these are not always visible. *C. nigrirostris* can easily be distinguished by its thick black bill, and by the rufous tinge on the inner webs of the quills[8]. It is confined to Central America, and ranges from Southern Mexico to Panama.

We found the species in Guatemala only in the hot forest-regions of Vera Paz[4]. In Nicaragua Mr. Richmond[9] states that it is chiefly confined to the forest, and is abundant, particularly along streams, where its favourite perch is the Trumpet-tree (*Cecropia*).

Nothing further seems to have been recorded of the habits of this Pigeon.

9. Columba subvinacea.

Chlorœnas subvinacea, Lawr. Ann. Lyc. N. Y. ix. p. 135[1]; Salv. Ibis, 1869, p. 317[2]; v. Frantz. J. f. Orn. 1869, p. 371[3]; Rowley, Orn. Misc. iii. p. 75, t. 91[4].

Columba subvinacea, Salv. P. Z. S. 1870, p. 217[5]; Boucard, P. Z. S. 1878, p. 43[6]; Scl. & Salv. P. Z. S. 1879, p. 543[7]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127[8]; Salvad. Cat. Birds Brit. Mus. xxi. p. 326[9]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 9[10]; Bangs, Pr. New Engl. Zool. Club, iii. p. 23[11].

Supra cinnamomea, vinaceo lavata, uropygio vix saturatiore; capite, cervice et corpore subtus vinaceis, gula

albicantiore; abdomine et hypochondriis magis cinnamomeis; alis cinnamomeo-brunneis intus pure cinnamomeis; cauda dorso fere concolore: rostro nigro; pedibus carneis. Long. tota circa 13·0, alæ 6·8, caudæ rectr. med. 5·8, rectr. lat. 4·5, rostri a rictu 0·8, tarsi 0·85. (Descr. feminæ ex San José, Costa Rica. Smiths. Inst. No. 34937. Mus. nostr.)

Hab. Costa Rica, Dota Mts.[1 2], San José[9], Barranca[9] (*Carmiol*), San Antonio (*v. Frantzius*[3]), Volcan de Irazu[4], Candelaria[6] (*Boucard*), Las Trojas, Naranjo de Cartago (*Zeledon*[8]), Azahar de Cartago, Sarchi de Grecia (*Underwood, in litt.*); Panama, Boquete (*Brown*[11]), Volcan de Chiriqui[9], Calovevora[5] (*Arcé*), Punta de Sabana (*Festa*[10]).—Colombia[9]; Ecuador[9]; Venezuela[9].

C. subvinacea resembles *C. nigrirostris* in having the inner webs of the quills constantly tinged with rufous-cinnamon, but may be distinguished by the vinaceous-cinnamon colour of the back and wings. In some specimens traces of light spots on the lower part of the back of the neck can be detected[9].

This Pigeon is an inhabitant of Venezuela, Colombia, and Ecuador, and extends to Panama and Costa Rica. It is not uncommon in the southern part of our region.

Nothing has been recorded of its habits.

Subfam. *ECTOPISTINÆ.*

In this subfamily the tail is elongated and exceeds the wing in length, and the rectrices are gradually pointed towards the ends. As in the Columbinæ, the tarsus is shorter than the lateral toes.

Only one genus is known.

ECTOPISTES.

Ectopistes, Swains. Zool. Journ. iii. p. 362 (1827); Salvad. Cat. Birds Brit. Mus. xxi. p. 369 (1893).

The characters for the genus are the same as those of the subfamily, the long attenuated tail being the chief distinguishing feature. It contains only one species, the well-known Passenger-Pigeon.

1. Ectopistes migratorius.

Columba migratoria, Linn. Syst. Nat. i. p. 285[1].

Ectopistes migratoria, Sw. Zool. Journ. iii. p. 362[2]; Baird, Brewer, & Ridgw. N. Am. Birds, iii. p. 368[3]; Sanchez, An. Mus. Nac. Mex. i. p. 104[4]; Sanchez & Villada, La Nat. ii. p. 253[5].

Ectopistes migratorius, Herrera, La Nat. (2) i. pp. 185[6], 327[7]; Bendire, Life Hist. N. Am. Birds, p. 132, t. 4. fig. 6[8]; Salvad. Cat. Birds Brit. Mus. xxi. p. 369[9]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 120[10].

Supra pulchre schistaceus; tectricibus alarum quoque schistaceis, harum vero intimis cum scapularibus et secundariis intimis brunneis, maculis nigris variegatis; collo postico et laterali roseo-cupreo, sub certa luce viridescente ornatis; interscapulio quoque eodem modo iridescente; ala spuria, tectricibus primariorum et remigibus nigris, primariis externe albo, basin versus pogonii externi cinereo, marginatis; uropygio et supracaudalibus paullo brunnescentioribus; rectricibus duabus medianis nigricantibus, reliquis pulchre

cinereis, intus albicantibus, rectrice extima utrinque alba, intus cinerascente, omnibus nigro conspicue basin versus notatis; facie laterali et gula pulchre schistaceis; gutture imo et corpore reliquo subtus cinnamomeis, pectore et hypochondriis magis vinaceis, horum imis pulchre schistaceis; tibiis vinaceis; abdomine et subcaudalibus albis; subalaribus nigricantibus, majoribus autem et axillaribus pulchre cinereis: rostro nigro, regione nuda orbitali rubra; pedibus coccineis; iride aurantiaca. Long. tota circa 16·3, alæ 8·5, caudæ 7·9, culm. 1·0, tarsi 0·9. (Descr. maris adulti ex Big Otter Lake. Mus. nostr.)

♀ *ad.* mari similis, sed coloribus sordidioribus: supra brunneus, pileo vix cinerascente et nitore iridescente, colli laterali et postici minus conspicuo; alis caudaque sicut in mari coloratis, sed tectricibus majoribus late basin versus nigris; facie laterali et corpore subtus dilute brunneis, gula alba; abdomine et subcaudalibus albis. Long. tota circa 14·4, alæ 7·8. (Descr. feminæ adultæ ex Big Otter Lake. Mus. nostr.)

Juv. feminæ adultæ similis, sed plumis omnibus albido limbatis, remigibus extus rufo marginatis; tectricibus alarum maculis nigris majoribus variegatis. (Descr. maris juvenis ex Ontonagon, Michigan. Mus. nostr.)

Hab. Eastern North America, from Hudson Bay southward, and west to the Great Plains, straggling thence to Nevada and Washington [9].—Mexico, occasional in the State of Puebla, and at Jalapa and Orizaba in Vera Cruz (*Sanchez* [4 5]).

The Passenger-Pigeon, which formerly had a very wide range in North America, where it multiplied to such an extent that over a thousand captures have been recorded in one year in the district of Michigan alone, has of late been so reduced in numbers that its breeding is now mainly restricted to parts of Canada and the northern portion of the United States, as far west as Manitoba and Dacota [9], where it nests in isolated pairs instead of in communities as formerly. We have reason to believe that *E. migratorius* wanders as far south as the tablelands near the city of Guatemala.

The nest is a frail platform of sticks, and the eggs are usually two in number, both male and female birds taking a share in incubation.

Fam. PERISTERIDÆ.

The members of this family are mostly Ground-Pigeons. They have the tarsus longer than the lateral toes, which are equal to, or only slightly longer than, the middle toe.

According to Count Salvadori, seven subfamilies are included in the Peristeridæ, of which the Turtle-Doves (Turturinæ), the Bronze-wings (Phabinæ), and the Hackled Pigeons (Calœnadinæ) are Old-World forms, the rest being American.

Subfam. *ZENAIDINÆ.*

The characters for the above-mentioned subfamilies are very slight, and the only features selected for the separation of the Zenaidinæ are the blackish, somewhat metallic, spot beneath the ear-coverts and the metallic gloss on the sides of the neck.

Of the four genera comprised in the Zenaidinæ, one (*Nesopelia*) is confined to the Galapagos Archipelago; but the other three, *Zenaidura*, *Zenaida*, and *Melopelia*, are represented within our limits.

ZENAIDURA.

Zenaidura, Bp. Consp. ii. p. 84 (1854); Salvad. Cat. Birds Brit. Mus. xxi. p. 373 (1893).

In this genus the scapulars and innermost upper wing-coverts are spotted with black, and the tail consists of fourteen feathers. The bill is of moderate size and almost straight, whereas in *Nesopelia*, of the Galapagos, it is longer and much bent downwards.

Three species of *Zenaidura* are known, one being the widely-spread *Z. carolinensis* of North America, and the other two insular forms, viz. *Z. clarionensis* of Clarion Island and *Z. graysoni* of Socorro Island *.

1. Zenaidura carolinensis.

Columba carolinensis, Linn. Syst. Nat. i. p. 286 [1].

Zenaidura carolinensis, Bp. Consp. Av. ii. p. 84 [2]; Scl. P. Z. S. 1856, p. 309 [3]; 1858, p. 305 [4]; 1859, pp. 369 [5], 391 [6]; Scl. & Salv. Ibis, 1859, p. 222 [7]; Taylor, Ibis, 1860, p. 227 [8]; Lawr. Ann. Lyc. N. Y. ix. p. 139 [9]; Mem. Bost. Soc. N. H. ii. p. 304 [10]; Bull. U. S. Nat. Mus. no. 4, p. 44 [11]; Dugès, La Nat. i. p. 141 [12]; v. Frantz. J. f. Orn. 1869, p. 372 [13]; Salv. P. Z. S. 1870, p. 217 [14]; Ibis, 1889, p. 377 [15]; Baird, Brewer, & Ridgw. N. Am. Birds, iii. p. 383 [16]; Sumichr. La Nat. v. p. 231 [17]; Boucard, P. Z. S. 1878, p. 43 [18]; Belding, Pr. U. S. Nat. Mus. vi. p. 344 [19]; Nutting, Pr. U. S. Nat. Mus. vi. p. 389 [20]; Herrera, An. Mus. Nac. Mex. i. p. 105 [21]; Salvad. Cat. Birds Brit. Mus. xxi. p. 374 [22].

Columba macroura, Linn. Syst. Nat. i. p. 164 (1758) [23].

Zenaidura macrura, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 174 [24]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 128 [25]; Herrera, La Nat. (2) i. pp. 185 [26], 327 [27]; Cherrie, Auk, 1892, p. 329 [28]; Allen, Bull. Amer. Mus. v. p. 34 [29]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 121 [30]; Bendire, Life Hist. N. Amer. Birds, p. 139, t. 4. figs. 8, 9 [31]; Nelson, N. Amer. Fauna, no. 14, p. 36 [32]; Bangs, Auk, xviii. p. 358 [33].

Columba marginata, Linn. Syst. Nat. i. p. 286 [34]; Wagler, Isis, 1831, p. 519 [35].

Supra brunnescens, scapularibus et secundariis intimis nigro conspicue maculatis; tectricibus alarum cineraceo lavatis, majoribus cum ala spuria et tectricibus primariorum cineraceis; remigibus sepiariis, extus cinereis, primariis anguste albo limbatis; supracaudalibus et rectricibus medianis brunneis cinereo lavatis, his reliquis cinereis, externis fere albis, omnibus fascia nigra mediana notatis; pileo et collo postico pulchre cinereis; fronte et vertice antica, pileî lateribus et facie laterali venuste vinaceis; fascia parva subauriculari nigra; colli lateribus plaga metallice rosaceo-cuprea ornatis; mento et gula summa albidis; corpore reliquo subtus vinacescente; abdomine et subcaudalibus magis ochrascentibus, his pallidioribus; subalaribus, axillaribus, corporis lateribus et tibiis pulchre cinereis; remigibus intus quoque cinereis: rostro

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* A supposed fourth species is:—

Zenaidura yucatanensis.

Zenaidura yucatanensis, Lawr. Ann. Lyc. N. Y. ix. p. 207 [1]; Salv. Ibis, 1874, p. 312 [2]; Sanchez, An. Mus. Nac. Mex. i. p. 105 [3]; Ridgw. Auk, i. p. 96 [4]; Salvad. Cat. Birds Brit. Mus. xxi. p. 373, note [5].

Hab. Mexico, Merida in Yucatan (*Schott* [1]).

Count Salvadori [5] examined the type of this species, which was lent to him by the United States National Museum, and he agrees with Messrs. Baird, Brewer, and Ridgway, in their 'North American Birds,' that the specimen, still the only one known, is a hybrid between *Zenaidura carolinensis* and *Zenaida yucatanensis*.

nigro; plaga nuda oculari nigra; pedibus coccineis; iride brunnea. Long. tota circa 10·5, alæ 6·1, caudæ 4·7, culm. 0·7, tarsi 0·75. (Descr. maris adulti ex S. Miguel Molino. Mus. nostr.)

♀ *ad.* mari similis, sed paullo minor et magis brunnescens; pileo brunnescentiore vix canescente; colli lateribus vix iridescentibus: subtus brunnescens; pectore, abdomine et subcaudalibus ochrascentibus. Long. tota circa 10·0, alæ 5·3. (Descr. feminæ adultæ ex Azahar de Cartago, Costa Rica. Mus. nostr.)

Juv. feminæ adultæ similis et omnino brunnescens, sed plumis fere omnibus anguste albido limbatis.

Hab. Temperate North America, British Columbia, Canada, Maine [30].—Mexico, Ysleta in Sonora (*Lloyd* [22]), Huerachi (*Robinette* [29]), Guaymas (*Belding* [19]), Mazatlan (*Grayson* [10]), Tres Marias Is. (*Nelson* [32]), Nuevo Leon, Pesqueria Grande, Topo Chico, Hacienda de los Escobas, Hacienda de los Treviños (*Armstrong* [22]), Aldama, Soto La Marina, Tampico, Plains of San Luis Potosi, Jerez, Bolaños, Zacoalco, Zapotlan, Aguas Calientes, Tehuantepec (*Richardson* [22]), Guanajuato, Guadalajara (*Dugès* [12]), Valley of Mexico (*Herrera* [26 27]), Huehuetlan [24], Huipulco, San Miguel Molino, Atotonilco (*Ferrari-Perez* [22]), Jalapa (*de Oca* [5]), Cordova (*Sallé* [3]), La Parada [4], Talea [6], Oaxaca [6] (*Boucard*), Villa Alta (*Trujillo* [22]), Gineta Mountains (*Sumichrast* [11]), Cozumel I. (*Gaumer* [15]); Guatemala, San Martin de Quezaltenango (*Richardson* [22]), Dueñas (*O. S.*[7] [22] *& F. D. G.*); Honduras (*Taylor* [8]); Nicaragua, Sucuyá, on the west shores of Lake Nicaragua (*Nutting* [20]); Costa Rica, San José (*v. Frantzius* [13], *Carmiol* [9], *Calleja* [22], *Boucard* [18], *Cherrie* [28]), Irazu (*Cooper* [9]), San Mateo, slopes of Irazu (*Zeledon* [25]), Alajuela, San Lucas, Azahar de Cartago, Bebedero to Miravalles (*Underwood, in litt.*); Panama, Divala (*Brown* [33]), Volcan de Chiriqui [22], Calobre (*Arcé* [14]).—Antilles [30], Cuba and Haiti [22].

The Carolina Dove is found in the temperate area of North America, and breeds throughout this part of its range [30]. In Mexico the species is widely distributed, but is most plentiful on the high central plains, and M. Boucard [4] even observed specimens at La Parada, at an elevation of 10,000 feet; it is probably resident in certain districts, but, although recorded in large numbers, we have at present no evidence of its nesting in that country. In the Tres Marias Islands [32] the bird occurs on migration, and also in the Valley of Mexico [26 27], arriving in October and November, and returning north in March. In Guatemala we found *Z. carolinensis* a resident and very abundant in the neighbourhood of Dueñas, where it inhabited the open districts, usually congregating in flocks. At San José, Costa Rica [28], it is found throughout the year, but here, again, there is no record of its nesting.

Though seen in companies during the season of migration, this species does not congregate in such large flocks as the Passenger-Pigeon. The food consists of various seeds, grains, berries, acorns, &c., as well as insects and worms, the young birds being fed on the latter. The nest, which is not unfrequently placed in the vicinity of dwellings, is the usual slight structure of sticks, built at varying heights, from a few inches to fifty feet from the ground. The nests of other birds are often utilized, and this Pigeon has even been known to lay in a Woodpecker's hole. The eggs are two in number, but three and four have been recorded, doubtless laid by two different birds.

2. Zenaidura clarionensis.

Zenaidura clarionensis, Towns. Pr. U. S. Nat. Mus. xiii. p. 133[1]; Salvad. Cat. Birds Brit. Mus. xxi. p. 378[2]; Anthony, Auk, xv. p. 318[3].

Z. carolinensi similis, sed ubique saturatior: supra rufo-brunnescens, pileo postico vix cinereo tincto, et potius dorso concolore: subtus omnino saturatius vinacea. Long. tota circa 10·5, alæ 5·4, caudæ 4·0, culm. 0·85, tarsi 0·75. (Descr. maris adulti ex Clarion I. Mus. Brit.)

Hab. Revillagigedo Is., Clarion I. (*Townsend*[1], *Anthony*[3]).

Mr. Anthony, who visited Clarion Island in 1897, says that this species was very common there. He found a fully-fledged bird on May 19th, and on the 23rd a fresh egg was found in a hollow in the ground, from which the parent fluttered upon being approached. As Doves were often seen flying along the cliffs, and entering the holes in the lava, it is not improbable that others were nesting there also[3].

3. Zenaidura graysoni.

Zenaidura graysoni, Lawr. Ann. Lyc. N. Y. x. p. 17[1]; Mem. Bost. Soc. N. H. ii. p. 304[2]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 299[3]; Salv. Ibis, 1874, p. 312[4]; Towns. Pr. U. S. Nat. Mus. xiii. p. 135[5]; Salvad. Cat. Birds Brit. Mus. xxi. p. 378[6]; Anthony, Auk, xv. p. 316[7].

Z. carolinensi similis, sed corpore subtus toto rufescenti-cinnamomeo distinguenda: rostro nigro; pedibus et iride rubris. Long. tota circa 11·0, alæ 5·8, caudæ 4·8, culm. 0·65, tarsi 1·05. (Descr. ex scriptis T. Salvadori.)

Hab. Revillagigedo Is., Socorro I. (*Grayson*[1 3], *Townsend*[5], *Anthony*[7]).

This species differs from *Z. carolinensis* and *Z. clarionensis* in the colour of the under surface, which is entirely rufous-cinnamon. It is apparently a rare bird in Socorro, but may be more abundant in the higher and less accessible parts of the island.

ZENAIDA.

Zenaida, Bp. Comp. List Birds Eur. & N. Amer. p. 41 (1838); Salvad. Cat. Birds Brit. Mus. xxi. p. 379 (1893).

This genus differs from *Zenaidura* in having a shorter and more rounded tail, the latter being only three-fourths the length of the wing. The tail-feathers are fourteen in number, as in *Zenaidura*, instead of twelve, as in *Nesopelia* of the Galapagos. *Zenaida* is divided by Count Salvadori into two sections, one with, and the other without, a band of white on the secondaries. The four species of the latter are confined to South America, while the three white-banded forms inhabit respectively the Greater and Lesser Antilles and the islands off the coast of Yucatan.

Z. auriculata, a South-American species, distinguished by the absence of a white wing-band and by the presence of white ends to the outer tail-feathers, has been recorded from within our limits, as a specimen obtained by Kellett and Wood on the Pearl Islands, off the coast of Panama, is referred to it by Count Salvadori (Cat. Birds Brit. Mus. xxi. p. 386), but it is possible there may have been some error in the locality recorded.

1. Zenaida yucatanensis.

Zenaida yucatanensis, Salvad. Cat. Birds Brit. Mus. xxi. p 384 [1].

Zenaida amabilis (nec Bp.), Boucard, P. Z. S. 1883, p. 458 [2]; Salv. Ibis, 1889, p. 377 [3].

Supra terricolor, tectricibus alarum dorso concoloribus, majoribus intimis et scapularibus nigro oblonge maculatis; dorsi imi lateribus conspicue cinereis; rectricibus medianis brunneis, fascia subapicali nigra, reliquis schistaceis, pulchre cinereo late terminatis, nigro subterminaliter transfasciatis, rectrice extima extus cinerea; ala spuria, tectricibus primariorum remigibusque nigricantibus, his anguste albido limbatis, secundariis late albo terminatis, fasciam alarem exhibentibus; pileo dorso concolore, fronte vix pallidiore, collo postico et colli lateribus metallice violaceo et chalybeo nitentibus; facie laterali, gutture et collo antico terricoloribus, his cineraceo lavatis; mento albo; fascia auriculari metallice purpurea; corpore reliquo subtus vinaceo, lateribus cum subalaribus axillaribusque pulchre cinereis. Long. tota circa 10·0, alæ 6·3, caudæ 3·2, culm. 0·9, tarsi 0·9. (Descr. maris adulti ex Cozumel I. Mus. nostr.)

♀ mari similis, sed coloribus paullo dilutioribus, gastræi colore vinaceo pallidiore, gutture et pectore summo grisescenti-brunneo lavatis. Long. tota circa 9·5, alæ 6·2. (Descr. feminæ adultæ ex Jolbox I. Mus. nostr.)

Hab. Mexico, coast of Yucatan, Rio Lagartos [12], Progreso [2], Cozumel I. [1], Jolbox I. [13], Mugeres I. [13] (*Gaumer*).

The difference between *Z. yucatanensis* and *Z. amabilis* of the Greater Antilles has been pointed out by Count Salvadori. In the former the upper parts are of a greyish tint, not inclining to reddish-brown as in the latter; and as this colour is common to the large series of the Yucatan birds in our collection, we consider the race worthy of recognition.

We have no notes on the habits of this Dove, but its ally, *Z. amabilis*, is of a solitary nature, passing much of its time on the ground. In the Bahamas it feeds on seeds, and builds either in rocks or trees, while in Florida the nests are sometimes placed upon the ground.

MELOPELIA.

Melopelia, Bp. Consp. Av. ii. p. 81 (1854); Salvad. Cat. Birds Brit. Mus. xxi. p. 391 (1893).

Melopelia differs from *Zenaida* and the allied genera in having no black spots on the scapulars, and the white alar band is also a distinguishing feature. As in *Zenaida*, the tail is rounded and has only twelve rectrices; it is, however, longer, being three-fourths the length of the wing, whereas in *Zenaida* the tail is barely two-thirds (*Ridgway*). Count Salvadori also observes that the first two primaries are slightly scooped towards the apical third of the inner web.

Only one species is known, of which we give a description below.

1. Melopelia leucoptera.

Columba leucoptera, Linn. Syst. Nat. i. p. 281 [1].

Zenaida leucoptera, Scl. P. Z. S. 1856, p. 309 [2]; 1858, p. 305 [3]; 1859, p. 368 [4]; Scl. & Salv. Ibis, 1859, p. 223 [5]; Taylor, Ibis, 1860, p. 227 [6].

Melopelia leucoptera, Bp. Consp. Av. ii. p. 81 [7]; Moore, P. Z. S. 1859, p. 61 [8]; Scl. P. Z. S. 1864, p. 178 [9]; Lawr. Ann. Lyc. N. Y. ix. pp. 139 [10], 207 [11]; Mem. Bost. Soc. N. H. ii. p. 305 [12]; Bull. U. S. Nat. Mus. no. 4, p. 44 [13]; Frantz. J. f. Orn. 1869, p. 372 [14]; Dugès, La Nat.

i. p. 141 [15]; Scl. & Salv. P. Z. S. 1870, p. 838 [16]; Salv. P. Z. S. 1883, p. 428 [17]; Ibis, 1889, p. 377 [18]; Baird, Brewer, & Ridgw. N. Am. Birds, iii. p. 376 [19]; Sanchez, An. Mus. Nac. Mex. i. p. 105 [20]; Sumichrast, La Nat. v. p. 232 [21]; Nutting, Pr. U. S. Nat. Mus. v. p. 408 [22]; vi. pp. 378 [23], 389 [24], 395 [25]; Belding, Pr. U. S. Nat. Mus. vi. p. 344 [26]; Boucard, P. Z. S. 1883, p. 459 [27]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175 [28]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [29]; Stone, Pr. Ac. Phil. 1890, p. 204 [30]; Herrera, La Nat. (2) i. pp. 185 [31], 327 [32]; Bendire, Life Hist. N. Am. Birds, p. 145 [33]; Salvad. Cat. Birds Brit. Mus. xxi. p. 392 [34]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 122 [35]; Chapman, Bull. Amer. Mus. N. H. viii. p. 287 [36]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 789 [37]; Nelson, N. Amer. Fauna, no. 14, p. 36 [38].

Brunnea, dorso postico et uropygio pallide cinereis, brunneo lavatis; tectricibus alarum et secundariis intimis dorso concoloribus; ala spuria et tectricibus majoribus cinereis, brunneo lavatis, et late albo terminatis, fasciam transalarem distinctam formantibus; remigibus nigris, primariis extus albo anguste limbatis, secundariis apicem versus albo marginatis; supracaudalibus et rectricibus duabus medianis brunneis, proximis ad apicem pallide cinereis, nigro subterminaliter fasciatis, reliquis cinereis ad apicem pallide cinereo-albis et fascia nigra subterminali ornatis; pileo et collo postico pulchre purpurascenti-vinaceo adumbratis, fronte pallidiore brunnea basin versus cinerascente; facie laterali, gutture et præpectore cervino-brunneis, mento cinereo-albo; corpore reliquo subtus pulchre cinereo: rostro nigro, regione orbitali nuda cyanescente; pedibus saturate coccineis; iride aurantiaca. Long. tota circa 10·5, alæ 6·5, caudæ 4·2, culm. 0·95, tarsi 0·95. (Descr. maris adulti ex La Libertad, Salvador. Mus. nostr.)

♀ mari similis, sed dorso postico et corpore subtus minus cinereis, potius brunneo lavatis. Long. tota circa 10·5, alæ 6·5. (Descr. feminæ ex Chiapas. Mus. nostr.)

Hab. North America, Florida, Texas, New Mexico, Arizona, and Lower California, wandering northward to Colorado [35].—Mexico, Matamoros (*Dresser* [34]), Sonora, Alamos (*Lloyd* [34]), Nuevo Leon, Pesqueria Grande, Hacienda de Los Escobas, Panaguslin, Rio de Monterey, Rio Gila (*Armstrong* [34]), Guaymas (*Belding* [26]), Mazatlan (*Grayson* [12], *Forrer* [34]), Colima (*Xantus* [12]), Tres Marias Is. (*Nelson* [38]), Guanajuato, Guadalajara (*Dugès* [15]), Tierra Colorada, Guerrero (*Mrs. H. H. Smith* [34]), Acapulco (*Markham* [17 34]), Tampico, San Luis Potosi, Tepic, San Blas, Bolaños, Zapotlan, Aguas Calientes, Jerez (*Richardson* [3]), Tehuacan [21], Juchitan [21], Tapana [21], Tehuantepec [13 21], Oaxaca [21] (*Sumichrast*), Valley of Mexico (*White* [9], *Sumichrast* [21], *Herrera* [31 32]), Vera Cruz, Cordova (*Sallé* [2]), Jalapa (*de Oca* [4]), La Parada (*Boucard* [3]), Juchatengo (*Trujillo* [34]), Atlixco [28], Atotonilco [34] (*Ferrari-Perez*), Yucatan (*Gaumer* [27 34], *Stone* [30]), Chichén-Itzá (*Chapman* [35]), Merida (*Schott* [11]), Yzamal [34], Mugeres I. [18], Cozumel I. [18] (*Gaumer*); Guatemala, San José, Sololá (*Richardson* [34]), Volcan de Agua [34], Dueñas [5], San Gerónimo [34] (*O. S. & F. D. G.*); Honduras, Omoa (*Leyland* [5 8]), San Pedro (*Whitely* [16 34]), Comayagua, Pacific coast (*Taylor* [6]); Salvador, La Libertad (*Richardson* [34]); Nicaragua, Ometépe [25], Sucuyá [24], San Juan del Sur [23] (*Nutting*); Costa Rica (*v. Frantzius* [14]), San José (*Carmiol* [10]), San Mateo (*Zeledon* [29]), La Palma (*Nutting* [22]), San Lucas, Bebedero, Bugaces, Miravalles (*Underwood, in litt.*).—Greater Antilles, Jamaica [34].

The White-winged Dove breeds in Arizona, New Mexico, Western and South-

western Texas, though somewhat local in parts of its range. It is common throughout Central Mexico and abundant in the southern part of the Valley of Mexico. Grayson observed it breeding in Tehuantepec, but we have no further information respecting the nidification of the species in Central America. Near La Parada, in Oaxaca, Boucard noticed it at an elevation of 10,000 feet, and specimens have also been recorded from the Tres Marias Islands. In Yucatan, numbers of these Doves may be found both in the morning and evening in the cornfields, or feeding on the seeds of certain leguminous trees; during the day they frequent the banks of the cenotes (water-holes), which they doubtless visit for shade as well as water.

We found *M. leucoptera* common in the open savannas about Dueñas in April and May. Taylor [6] noted it as abundant in the vicinity of houses and cornfields, on the Pacific coast of Honduras and in the environs of Comayagua. In Costa Rica this bird is plentiful in the clearings and open woods in the dry season, but disappears during the rains, and in Nicaragua it is found in similar localities.

The flight is accompanied with a whistling sound, louder than that produced by *Zenaidura carolinensis*. The mournful call-note resembles that of a young cockerel, and it has variations of the cooing characteristic of Pigeons. The nest consists of a frail structure of twigs lined with weeds, "mesquite" leaves, and dry grasses, and is usually placed in cactus-plants or trees at a height varying from two to thirty feet. The breeding-season continues from the middle of May to the middle of July, being more prolonged in some localities than in others. The eggs are two in number, of a rich creamy tint, which soon fades to a dead white [33].

Subfam. *GEOPELIINÆ*.

The members of this subfamily can be distinguished from the Zenaidinæ by the absence of a metallic spot on the sides of the neck or wings. The wings are rounded, and the primaries scarcely exceed the secondaries in length. Three genera of Geopeliinæ are known, viz., *Geopelia* of Eastern Asia and Australia, *Scardafella* of North, Central, and South America, and *Gymnopelia* of Peru and Chile.

SCARDAFELLA.

Scardafella, Bp. Consp. Av. ii. p. 85 (1854); Salvad. Cat. Birds Brit. Mus. xxi. p. 463 (1893).

In the Old-World genus *Geopelia* the tail-feathers are fourteen in number, while in *Scardafella* and *Gymnopelia* there are but twelve. In *Geopelia* the first primary is attenuated at the tip, but in the two American genera this is not the case, and *Scardafella* has not the conspicuous bare space round the eye which distinguishes *Gymnopelia*. The tail in *Scardafella* is quite as long as, or longer than, the wings, and the lateral feathers are graduated and narrowed at the tips, whereas in *Chamæpelia* the tail is shorter than the wing and the feathers are broad at the tips.

1. Scardafella inca.

Columba squamosa, Wagl. (nec Temm.), Isis, 1831, p. 519[1]; Licht. Preis-Verz. Mex. Vög. p. 3 (*cf.* Cab. J. f. Orn. 1863, p. 58)[2].

Scardafella squamosa, Sanchez, An. Mus. Nac. Mex. i. p. 105[3].

Chamæpelia inca, Less. Descr. Mamm. et Ois. p. 210[4].

Scardafella inca, Bp. Consp. Av. ii. p. 85[5]; Scl. P. Z. S. 1856, p. 309[6]; 1859, p. 391[7]; 1864, p. 178[8]; Moore, P. Z. S. 1859, p. 61[9]; Scl. & Salv. Ibis, 1859, p. 223[10]; 1860, p. 45[11]; Taylor, Ibis, 1860, p. 227[12]; Dugès, La Nat. i. p. 141[13]; Baird, Brewer, & Ridgw. N. Am. Birds, iii. p. 387[14]; Lawr. Mem. Bost. Soc. N. H. ii. p. 305[15]; Bull. U. S. Nat. Mus. no. 4, p. 44[16]; Sanchez, An. Mus. Nac. Mex. i. p. 105[17]; Sumichrast, La Nat. v. p. 232[18]; Salv. Cat. Strickl. Coll. p. 547[19]; P. Z. S. 1883, p. 428[20]; Belding, Pr. U. S. Nat. Mus. vi. p. 344[21]; Nuttiug, Pr. U. S. Nat. Mus. vi. p. 389[22]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175[23]; Herrera, La Nat. (2) i. pp. 185[24], 327[25]; Ridgw. Pr. U. S. Nat. Mus. xiv. p. 471[26]; Bendire, Life Hist. N. Amer. Birds, i. p. 152, t. 2. fig. 25[27]; Salvad. Cat. Birds Brit. Mus. xxi. p. 465[28]; Allen, Bull. Amer. Mus. N. H. v. p. 34[29]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 789[30]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 123[31]; Richmond, Pr. U. S. Nat. Mus. xviii. p. 628[32].

Brunnea, plumis singulis nigricanti-brunneo marginatis, quasi squamatis; fronte canescenti-alba, pileo reliquo, colli lateribus et tectricibus alarum magis vinaceo tinctis, harum majoribus et secundariis interioribus plus minusve cinereo externe lavatis et marginatis; ala spuria nigra; tectricibus primariorum et remigibus castaneis, extus et apicem versus nigricanti-brunneis; rectricibus medianis cinerascenti-brunneis, reliquis nigris, albo graduatim terminatis, exterioribus plerumque pure albis; facie laterali pure cinerea, plumis vix fusco marginatis; corpore subtus pallide lilacino-vinaceo, marginibus plumarum fuscis plus minusve obsoletis; mento albo; corporis lateribus vinaceis, marginibus fuscis magis distincte indicatis; abdomine imo et subcaudalibus pallide ochracescentibus, his medialiter obscure brunneo notatis, marginibus fuscis obsoletis; subalaribus et remigibus intus castaneis, iis nigro anguste marginatis, tectricibus medianis nigris, plagam nigram exhibentibus: rostro et pedibus pallide carneis; iride rubescente. Long. tota circa 8·5, alæ 3·6, caudæ 3·6, culm. 0·7, tarsi 0·65. (Descr. maris ex Dueñas. Mus. nostr.)

♀ mari similis, sed coloribus dilutioribus. Long. tota circa 8·4, alæ 3·6. (Descr. feminæ adultæ ex San Gerónimo. Mus. nostr.)

Juv. adultis similis, sed magis brunnescens, et plumis fascia ochracea subterminali ornatis; corpore subtus dilutiore, pallide vinascenti-brunneo, plumis sicut in adultis fusco marginatis.

Hab. North America, Rio Grande Valley, Southern Arizona to Lower California[31].—Mexico (*Wagler*[1], *Deppe & Schiede*[2]), Sonora, Guaymas (*Belding*[21], *Frazar*[28]), Macosari (*Cahoon*[28]), Rio Mayo (*Lloyd*[28]), Granados, Rio Yaqui (*Robinette*[29]), Chihuahua, Tomosachic (*Lloyd*[28]), Nuevo Leon, Rio de la Silla, San Agustin, Vaqueria, Topo Chico (*Armstrong*[28]), Tamaulipas, Nuevo Laredo[28], Alta Mira[32] (*Armstrong*), Aldama, Tampico, Tamesi, Aguas Calientes, Bolaños (*Richardson*[28]), Plains of San Luis Potosi (*Jouy*[30], *Richardson*[28]), Mazatlan (*Grayson*[15], *Forrer*[28]), Presidio (*Forrer*[28]), Guadalajara (*Grayson*[15], *Jouy*[30]), Guanajuato (*Dugès*[13]), Jalisco, Tonila (*Lloyd*[28]), Guerrero, Soledad, Sierra Madre del Sur (*Mrs. H. H. Smith*[28]), Acapulco (*Markham*[20 28]), Tehuantepec (*Sumichrast*[16 18], *Richardson*[28]), Tapanatepec (*Sumichrast*[18]), Valley of Mexico (*Herrera*[24 25], *White*[8]), Chimalpa[28], Ixtapalapa[28], Coapa[28], Culhuacan[28], Atotonilco[28], Huexotitla[23] (*Ferrari-Perez*), Vera Cruz, La Antigua (*Trujillo*[28]), Plan del Rio (*Ferrari-Perez*[28]), Cordova

(*Sallé* [6], *Sumichrast* [18]), Orizaba (*Sumichrast* [18]), Oaxaca (*Boucard* [7]), Putla (*Rébouch* [28]); GUATEMALA (*Constancia* [19]), San Gerónimo [10 28], Choctum [28], Dueñas [11 28] (*O. S. & F. D. G.*), Peten (*Leyland* [9 10]); HONDURAS (*Taylor* [12]), San Pedro (*Leyland* [9 10]), Chamelicon (*Wittkugel* [26]); SALVADOR, La Libertad (*Richardson* [28]); NICARAGUA, Volcan de Chinandega (*Richardson* [28]), Sucuyá (*Nutting* [22]).

The Inca Dove breeds more or less abundantly in Southern Arizona, and formerly nested in the lower part of the Rio Grande valley in Texas, where it is now no longer resident. We received but two specimens from Mr. Armstrong, an adult from Corpus Christi and another from Hidalgo, both procured in spring. In Lower California, Xantus found this small Ground-Dove breeding abundantly [27], and it is a constant resident at Mazatlan and in Guadalajara and Tepic [15]. To judge from the dates at which our specimens were procured, it is probable that *S. inca* is a resident and breeds in all parts of Mexico. Herrera found the bird nesting in the Valley of Mexico in December, while in Guadalajara Jouy observed it breeding in that month and also in June. In Honduras the species is very common and usually seen in pairs [12], but further south in Central America it is less plentiful. Salvin shot an adult male at Dueñas in Guatemala in 1859, but it was the only one seen on that expedition; we subsequently, however, obtained a female and a young bird at San Gerónimo, in 1861, and this is probably about the southern limit of its range.

The species is of a tame habit, often frequenting the streets and gardens of towns. The nest, placed in bushes or small trees, consists of a platform of twigs and grasses; the eggs are white and two in number [27].

Subfam. *PERISTERINÆ.*

The members of this subfamily are closely allied to those of the Geopeliinæ, both in appearance and habits. They are among the smallest of the Pigeons, and have metallic spots on the wings, but are otherwise of a somewhat uniform style of coloration. The tail is short and consists of twelve feathers (*cf.* Salvadori, Cat. Birds Brit. Mus. xxi. p. 372).

The Peristerinæ are entirely confined to America, and of the six genera composing the subfamily two are found within our limits.

CHAMÆPELIA.

Chamæpelia, Swains. Zool. Journ. iii. p. 361 (1827); Salvad. Cat. Birds Brit. Mus. xxi. p. 472 (1893).
Columbigallina, Boie, Isis, 1826, p. 977.

This genus contains half a dozen species of small Ground-Doves, three of which occur in Central America. They are of sober coloration, and are distinguished by

having the first primary entire and not abruptly attenuated at the tip; the wing is less than four inches in length.

We agree with Count Salvadori that Boie's ill-constructed term *Columbigallina* should not be allowed to take precedence over such a well-known name as *Chamæpelia*.

1. Chamæpelia passerina.

Turtur minimus guttatus, Sloane, Hist. Jam. ii. p. 305, t. 261 [1].

Columba passerina, Linn. Syst. Nat. i. p. 285 [2]; Temm. & Knip, i. (3) tt. 13, 14 [3].

Chamæpelia passerina, Gray, List Gen. Birds, p. 75 (1841) [4]; Scl. P. Z. S. 1857, p. 205 [5]; 1859, pp. 369 [6], 391 [7]; 1864, p. 178 [8]; Scl. & Salv. Ibis, 1859, p. 223 [9]; 1860, p. 45 [10]; Lawr. Ann. Lyc. N. Y. ix. pp. 139 [11], 207 [12]; Bull. U. S. Nat. Mus. no. 4, p. 44 [13]; v. Frantz. J. f. Orn. 1869, p. 371 [14]; Baird, Brewer, & Ridgw. N. Am. Birds, iii. p. 389 [15]; Boucard, P. Z. S. 1878, p. 43 [16]; Sanchez, An. Mus. Nac. Mex. i. p. 105 [17]; Sumichrast, La Nat. v. p. 231 [18]; Ridgw. Pr. U. S. Nat. Mus. v. p. 502 [19]; Nutting, Pr. U. S. Nat. Mus. v. p. 408 [20]; vi. pp. 378 [21], 389 [22], 396 [23]; Belding, Pr. U. S. Nat. Mus. vi. p. 344 [24]; Salv. Ibis, 1889, p. 377 [25]; Salvad. Cat. Birds Brit. Mus. xxi. p. 473 [26]; Underwood, Ibis, 1896, p. 447 [27].

Columbigallina passerina, Boie, Isis, 1826, p. 977 [28]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [29]; Ridgw. Pr. U. S. Nat. Mus. viii. p. 581 [30]; Cory, Birds West Ind. p. 217 [31]; Bendire, Life Hist N. Am. Birds, p. 148 [32].

Chamæpelia passerina, var. *pallescens*, Baird, Pr. Ac. Philad. 1859, p. 305 [33]; Ridgw. Pr. U. S. Nat. Mus. iii. p. 235 [34]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175 [35]; Stone, Pr. Ac. Philad. 1890, p. 204 [36]; Bendire, Life Hist N. Amer. Birds, p. 150, t. 2. fig. 24 [37]; Richm. Pr. U. S. Nat. Mus. xvi. p. 523 [38]; Chapm. Bull. Amer. Mus. viii. p. 287 [39]; x. p. 36 [40]; Nelson, N. Amer. Faun. no. 14, p. 37 [41]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 123 [42].

Chamæpelia pallescens, Grayson, Pr. Bost. Soc. N. H. xiv. p. 275 [43]; Lawr. Mem. Bost. Soc. N. H. ii. p. 305 [44]; Sanchez, An. Mus. Nac. Mex. i. p. 105 [45].

Columba pusilla, Licht. Preis-Verz. Mex. Vög. p. 3 [46]; Cab. J. f. Orn. 1863, p. 58 [47].

Columbigallina passerina terrestris, Chapman, Bull. Amer. Mus. iv. 1892, p. 292 [48]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 122 [49].

Chamæpelia terrestris, Sharpe, Hand-l. Birds, i. p. 81 [50].

Pallide brunnea, scapularibus et secundariis intimis dorso concoloribus, horum nonnullis purpureo ornatis; tectricibus alarum lilacino-vinaceis, maculis vel fasciis purpurascentibus ornatis, majoribus cinerascentibus, externis in pogonio externo nigricantibus; ala spuria nigra; tectricibus primariorum et remigibus nigricantibus, intus castaneis, primariis mediis castaneis, extus nigro et apicem versus nigricantibus; rectricibus medianis dorso concoloribus, reliquis cinereis, apicem versus late nigris, extimis albo marginatis; pileo postico pulchre cinereo, plumis schistaceo marginatis, quasi squamatis; fronte et vertice antica, supercilio, facie laterali et corpore subtus lilacino-vinaceis, gutture vix pallidiore; gutture et præpectore maculis nigricantibus cordiformibus ornatis; hypochondriis imis cinerascentibus, dorso concoloribus; subcaudalibus quoque cinerascentibus, late cinereo-albo marginatis; subalaribus, axillaribus et remigibus intus castaneis: rostro nigro, basin versus flavo; pedibus rubescentibus; iride rubra. Long. tota circa 6·2, alæ 3·5, caudæ 2·15, culm. 0·55, tarsi 0·7. (Descr. maris ex Epatlan, Puebla. Mus. nostr.)

♀ mari similis, sed pallidior et magis cinerascenti-brunnea, pileo dorso concolore vix cinereo lavato, vel marginibus fuscis squamato; fronte cinerascente; loris et gula summa albis; facie laterali et corpore subtus vinascescenti-brunneo; gutture et præpectore maculis centralibus nigricantibus marmoratis, plumis pallide cineraceo marginatis; abdomine imo albicante; subcaudalibus fuscescenti-brunneis, late albo

marginatis et terminatis; subalaribus et axillaribus castaneis; hypochondriis paullo castaneo lavatis. Long. tota circa 6·1, alæ 3·4. (Descr. feminæ ex Axotla. Mus. nostr.)

Juv. feminæ adultæ similis, sed plumis albido marginatis distinguenda.

Hab. North America, South Atlantic and Gulf States, breeding from South Carolina to Louisiana [49], Florida [26] (*C. terrestris*), Texas to Lower California [42] (*C. pallescens*). —Mexico generally (*Sumichrast* [18]), Matamoros (*Dresser* [26]), Sonora (*Cahoon* [26]), Guaymas (*Belding* [24]), Santa Rosa (*Lloyd* [26]), Mazatlan (*Grayson* [44], *Forrer* [26]), Tres Marias Is. (*Grayson* [43], *Forrer* [26], *Nelson* [41]), Soto La Marina, Aldama, Sierra Madre above Ciudad Victoria, Tampico, Tamesi, San Blas, Tepic, Chapala, Vera Cruz, Salina Cruz (*Richardson* [26]), Nuevo Leon, Monte Morelos, Hacienda de los Escobas (*Armstrong* [26]), Zapotlan, Jalisco (*Lloyd* [26]), Chilpancingo, Guerrero (*Mrs. H. H. Smith* [26]), Valley of Mexico (*White* [8]), Epatlan, Chimalpa, Axotla, Coapa, Mexicalcingo, Ixtapalapa, Culhuacan, Coatepec, Chietla, Chiautla, Acatlan (*Ferrari-Perez* [26 35]), San Andres Tuxtla (*Sallé* [5]), Oaxaca (*Boucard* [7]), Jalapa (*de Oca* [6 26], *F. D. G.* [26], *Chapman* [40]), Tehuantepec (*Sumichrast* [13]), Yucatan, Merida (*Schott* [12]), Chichén-Itzá (*Chapman* [39]), Tekanto, Ticul (*Stone & Baker* [36]), Cozumel I. (*Bean* [30], *Gaumer* [25 26]), Peto, Holbox I., Mugeres I. (*Gaumer* [25 26]); British Honduras, Orange Walk (*Gaumer* [26]); Guatemala, Dueñas, San Gerónimo (*O. S. & F. D. G.* [9 10 26]), Panajachel, Santa Maria near Quezaltenango (*Richardson* [26]); Nicaragua, Sucuyá [22] and Ometépe I. [23], Lake of Nicaragua, San Juan del Sur, Pacific coast [21] (*Nutting*), San Carlos (*Richmond* [38]); Costa Rica (*v. Frantzius* [14]), San José (*Carmiol* [11], *Zeledon* [29], *Boucard* [16]), Cartago (*Cooper* [11]), Bebedero to Miravalles, Alajuela (*Underwood* [27]), Volcan de Irazu (*Nutting* [19], *Rogers* [26]), La Palma, Gulf of Nicoya (*Nutting* [20]).—South America generally to Brazil and Paraguay [26]; Greater and Lesser Antilles [26].

We have carefully examined the large series of specimens which served as the basis of Count Salvadori's study of *C. passerina* for the 'Catalogue of the Birds in the British Museum,' and we agree with him as to the impossibility of defining the various races into which the species has been divided by some writers. The only clearly recognizable race is that from Socorro Island, which is of a very dark colour. The Jamaica bird is identified by Mr. F. M. Chapman as the true *C. passerina* of Linnæus, and the form from the South-eastern United States is therefore separated by him as *C. terrestris*. We have a long series of Florida specimens and the majority are of a very deep vinous tint, and some Mexican examples are of the same deep colour; that its richness and intensity increase with age there can be no doubt, and that it varies slightly with age is also true. According to Mr. Chapman, the colour of the bill in life is different in the various races, being wholly black in the Bahama bird, while the Jamaica form has the basal half or two-thirds yellow, this portion of the bill being coral-red in Florida specimens. The male of the Jamaica bird is said to be slightly paler and to have a whiter throat than its mainland representative; the females, too, show slight

differences. Our series of skins from Jamaica is not, however, large enough for us to judge of the value of Mr. Chapman's diagnosis, but the different colour of the bill, taken from the notes of Mr. W. D. Scott, appears to us to be a character of doubtful value. With regard to the lighter plumage, which would warrant the separation of *C. pallescens* as a distinct form, our series proves that there is no geographical area to which the light or dark birds can be restricted, and even the Florida specimens can be matched by others from Mexico, the grey of the head and the vinous colour of the throat varying greatly in the series.

The description of *C. passerina* was doubtless taken from Catesby just as much as from Sloane, both of whose figures are quoted by Linnæus; and in the face of so much uncertainty, we think it better to follow Salvadori in his nomenclature.

This little Ground-Dove is common throughout the greater part of Central America, and is said by Sumichrast to be abundant in Mexico; we also found it to be both plentiful and resident in Guatemala, nesting near Dueñas in the *Opuntia*-plantations. The species is also common in Costa Rica [19] and in Nicaragua [23], especially about the roads and cattle-paths and in the neighbourhood of dwellings. It lives almost entirely on the ground and feeds on seeds and grain. The nest is built of twigs and grass, and is a substantial structure for so small a Pigeon; it is usually placed in a bush or hanging creeper, and only occasionally on the ground.

2. Chamæpelia socorroensis.

Chamæpelia pallescens (nec Baird), Grayson, Pr. Bost. Soc. N. H. xiv. p. 300 [1]; Lawr. Mem. Bost. Soc. N. H. ii. p. 305 (part.) [2].

Columbigallina passerina socorroensis, Ridgw. Man. N. Amer. Birds, p. 586 [3]; op. cit. 2nd ed. 1896, p. 591 [4]; Anthony, Auk, xv. p. 316 [5].

Chamæpelia socorroensis, Sharpe, Hand-l. Birds, i. p. 81 [6].

C. passerinæ similis, sed saturate umbrino-brunnea, gastræo colore vinaceo saturatiore, subcaudalibus et hypochondriis imis saturate brunneis, dorso concoloribus, et vix dilutius terminatis, distinguenda. Long. tota circa 5·8, alæ 3·3, caudæ 2·2, culm. 0·55, tarsi 0·7. (Descr. maris adulti ex Socorro I. Mus. nostr.)

Hab. Revillagigedo Is., Socorro I. (*Grayson* [1 2], *Anthony* [5]).

When compared with a series of *C. passerina*, the Socorro bird is at once to be distinguished by its very dark colour; but in this respect it is somewhat approached by a specimen in our collection from San José in Costa Rica (*Carmiol*).

3. Chamæpelia minuta.

Columba minuta, Linn. Syst. Nat. i. p. 285 [1]; Temm. & Knip, Pig. i. (3) p. 28, t. 16 [2].

Chamæpelia minuta, Salvad. Cat. Birds Brit. Mus. xxi. p. 481 [3].

Chamæpelia amazilia, Bp. Consp. Av. p. 78 [4]; Scl. & Salv. P. Z. S. 1864, p. 370 [5].

Chamæpelia granatina, Lawr. (nec Bp.), Ann. Lyc. N. Y. vii. p. 333 [6].

Supra brunnea, vix grisescens; tectricibus alarum pallidioribus, scapularibus et secundariis intimis metallice purpureo irregulariter notatis; ala spuria, tectricibus primariorum remigibusque nigris, his intus castaneis;

rectricibus medianis brunneis, reliquis schistaceis apicem versus nigris; pileo postico colloque pulchre canis; fronte et facie laterali conspicue pallidioribus; mento albido; corpore reliquo subtus clare lilascenti-vinaceo, hypochondriis et subcaudalibus fuscescentioribus, his albido limbatis et cano lavatis; abdomine imo albido; subalaribus, axillaribus et remigibus intus cinnamomeis: rostro brunneo; pedibus carneis; iride violaceo-rubra. Long. tota circa 5·5, alæ 3·05, caudæ 2·0, culm. 0·45, tarsi 0·6. (Descr. maris adulti ex Retalhuleu. Mus. nostr.)

♀ mari similis, sed magis brunnescens, pileo colloque dorso concoloribus; corpore subtus brunnescente, gutture et pectore vix vinaceo lavatis; abdomine toto albo. Long. tota circa 5·4, alæ 3·1. (Descr. feminæ adultæ ex Atoyac. Mus. nostr.)

Hab. Mexico, Atoyac, Vera Cruz (*Mrs. H. H. Smith* [3]); Guatemala, Retalhuleu (*Richardson* [3]); Panama (*M'Leannan* [5 6], *Arcé* [3]).—Guiana [3]; Brazil [3]; Paraguay [3]; Peru [3].

We notice certain differences of colour in a series of these birds from our region, and the male described is more pearly grey on the forehead, lores, and region of the eye than in South-American examples. Most of the specimens in the British Museum have the sides of the face vinous, but we observe that one from Peru has a grey face. A bird from Panama, obtained by Arcé, is remarkably dark in colour, but as it has a brown patch on the nape, following the grey crown, it may not be fully adult, though the underparts are of a rich vinous colour. It is probable that the plumage of *C. minuta* varies in intensity with locality in the same way as in *C. passerina*.

This little Dove has the under surface of the wing cinnamon or pale chestnut, as in *C. passerina*, but the breast is uniformly coloured and not scaly in appearance.

In habits this species resembles the other members of the genus.

4. Chamæpelia rufipennis.

Talpacotia rufipennis, Bp. Consp. Av. ii. p. 79 (ex Gray in Mus. Brit.) (1854) [1].

Chamæpelia rufipennis, Gray, List Columbæ Brit. Mus. p. 51 (1856) [2]; Moore, P. Z. S. 1859, p. 61 [3]; Scl. P. Z. S. 1859, p. 369 [4]; Scl. & Salv. Ibis, 1859, p. 223 [5]; P. Z. S. 1864, p. 370 [6]; 1870, p. 838 [7]; Taylor, Ibis, 1860, p. 227 [8]; Lawr. Ann. Lyc. N. Y. vii. p. 301 [9]; viii. p. 178 [10]; ix. pp. 139 [11], 207 [12]; Salv. P. Z. S. 1867, p. 159 [13]; 1870, p. 217 [14]; Ibis, 1889, p. 378 [15]; v. Frantz. J. f. Orn. 1869, p. 372 [16]; Sanchez, An. Mus. Nac. Mex. i. p. 105 [17]; Boucard, P. Z. S. 1878, p. 43 [18]; 1883, p. 459 [19]; Sumichrast, La Nat. v. p. 231 [20]; Salvad. Cat. Birds Brit. Mus. xxi. p. 487 [21]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 9 [22].

Peristera rufipennis, Schl. Mus. P.-B., Columbæ, p. 136 [23].

Columbigallina rufipennis, Ridgw. Pr. U. S. Nat. Mus. viii. p. 581 [24]; x. p. 584 [25]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [26]; Stone, Pr. Ac. Phil. 1890, p. 204 [27]; Chapman, Bull. Amer. Mus. N. H. viii. p. 287 [28]; Bangs, Pr. N. Engl. Zool. Club, ii. pp. 15 [29], 358 [30]; Auk, 1901, p. 25 [31].

Chamæpelia talpacoti rufipennis, Nutting, Pr. U. S. Nat. Mus. v. p. 408 [32].

Columbigallina rufipennis eluta, Bangs, Auk, 1901, pp. 257, 258 [33].

Supra cinnamomea, capite summo et cervice postica cinereis; fronte dilutiore; secundariis internis, tectricibus alarum interioribus in pogonio externo plaga obliqua subterminali chalybeo-nigra notatis: subtus vinaceo-cinnamomea, gula albicantiore; remigibus cinnamomeis, fusco terminatis; subalaribus nigris; cauda

nigricante, rectrice externa utrinque in pogonio externo apicem versus cinnamomeo limbata : rostro fusco ; pedibus carneis. Long. tota circa 7·0, alæ 3·4, caudæ 2·55, rostri a rictu 0·55, tarsi 0·65.

♀. Fusco-brunnea, capite cinerascentiore, alis sicut in mare maculatis, remigibus extrorsum nigro limbatis : subtus pallidior, gula et abdomine sordide albicantibus, rectrice extima utrinque versus apicem albo marginata ; subalaribus nigris. (Descr. maris et feminæ ex Retalhuleu, Guatemala. Mus. nostr.)

Hab. MEXICO, Los Rables and Escuinapa in Sinaloa (*Simons* [33]), Santiago, Tepic, Tonala, Chiapas (*Richardson* [21]), Acapulco, Tierra Colorada, Atoyac, Teapa (*Mrs. H. H. Smith* [21]), Potrero, Omealca, Vera Cruz (*Sumichrast* [20]), Huatusco (*Ferrari-Perez* [21]), Playa Vicente (*Trujillo* [21]), Jalapa (*De Oca* [4]), Putla (*Rébouch* [21]), Merida (*Schott* [12]), Tekanto (*Stone & Baker* [27]), Chichén-Itzá (*Chapman* [28]), Izalam [21], Buctzotz [21], Peto [21], Cozumel I. [15], Yucatan [19] (*Gaumer*); BRITISH HONDURAS (*Blancaneaux* [21]); GUATEMALA, Retalhuleu (*Richardson* [21]), Dueñas, Paraiso, Pacific coast (*O. S.* [21]), Peten (*Leyland* [3]); SALVADOR, La Libertad (*Richardson* [21]); HONDURAS, Comayagua (*Taylor* [5 8]), San Pedro (*Whitely* [7], *Leyland* [3]), Truxillo (*Townsend* [25]); NICARAGUA, Chinandega, Matagalpa (*Richardson* [21]); COSTA RICA (*Endres* [21]), San José (*Carmiol* [11]), Las Trojas (*Zeledon* [26]), Orosi (*v. Frantzius* [16]), Puntarenas (*Boucard* [18]), La Palma, Gulf of Nicoya (*Nutting* [32]); PANAMA [6 9], David (*Hicks* [10 13]), Chitra [14], Calobre [14], Bugaba [14], Mina de Chorcha [14], Chepo [21] (*Arcé* [21]), Lion Hill (*M'Leannan* [21]); Divala [29 30], San Miguel in the Pearl Is. [31] (*Brown*), Punta de Sabana (*Festa* [22]).

This species belongs to a different section of the genus *Chamæpelia*, having the sides of the tarsus feathered; it is further distinguished from *C. minuta* by the black bar on the under surface of the wing, and by other well-marked differences in plumage.

In Central America this Ground-Dove is very common, though it appears less frequent in Honduras, and it is not very numerously represented in our Mexican series. Mr. Bangs has recently separated the bird from Sinaloa as a pale race of *C. rufipennis*, which he calls *C. rufipennis eluta*. Our Mexican specimens cannot be separated from those from other countries, and dark and light individuals are found everywhere. Climate has, perhaps, something to do with this difference in colour, and birds from Panama are somewhat dark, but these can be matched by others from Cozumel and the mainland of Mexico. Many of the paler specimens appear to be bleached, the newly moulted individuals being always the darkest.

We know nothing of the habits of this species, but doubtless they are similar to those of other Ground-Doves.

PERISTERA.

Peristera, Swains. (nec Rafin.), Zool. Journ. iii. p. 360 (1827); Salvad. Cat. Birds Brit. Mus. xxi. p. 491 (1893).

Claravis, Oberholser, Pr. Acad. Philad. 1899, p. 203.

This genus* differs from *Chamæpelia* in style of coloration, and in having the first primary sharply attenuated at the tip. Both sexes have metallic bands on the wings.

Three species of *Peristera* are known, of which two occur within our limits; the other, *P. geoffroyi*, is peculiar to South America.

1. Peristera cinerea.

Columba cinerea, Temm. & Knip (nec Scopoli), Pig. i. (2) p. 126, t. 58[1]; Temm. Pl. Col. 266[2].

Peristera cinerea, Swains. Zool. Journ. p. 360[3]; Scl. P. Z. S. 1856, p. 309[4]; 1859, p. 391[5]; 1864, p. 178[6]; Moore, P. Z. S. 1859, p. 61[7]; Scl. & Salv. Ibis, 1859, p. 222[8]; P. Z. S. 1864, p. 370[9]; Lawr. Ann. Lyc. N. Y. vii. p. 301[10]; ix. p. 138[11]; v. Frantz. J. f. Orn. 1869, p. 371[12]; Salv. P. Z. S. 1870, p. 217[13]; Cat. Strickl. Coll. p. 549[14]; Nutting, Pr. U. S. Nat. Mus. vi. p. 408[15]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127[16]; Ridgw. Pr. U. S. Nat. Mus. x. p. 584[17]; Salvad. Cat. Birds Brit. Mus. xxi. p. 491[18]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 523[19]; Underwood, Ibis, 1896, p. 447[20].

Peristera pretiosa, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175 (nom. emend.)[21].

Claravis pretiosa, Oberh. Pr. Acad. Philad. 1899, p. 203[22]; Bangs, Pr. New Engl. Zool. Club, ii. p. 15[23]; Auk, 1901, p. 358[24].

Lilacino-cinerea, tectricibus alarum, scapularibus et secundariis quibusdam intimis maculis nigris ovatis vel quadratis ornatis; remigibus nigris, secundariis extus cinereo marginatis, intimis dorso concoloribus; rectricibus medianis schistaceis, apicem versus gradatim nigro terminatis, extimis nigris basin versus paullo cinereo adumbratis; pileo colloque et corpore toto subtus pallidioribus, magis margaritaceo-cinereis; fronte, loris et gula albidis; hypochondriis imis et subcaudalibus saturatioribus, magis schistaceis; subalaribus pallide cinereis; remigibus intus fuscescenti-nigris: rostro flavo; pedibus rubris; iride rubra, externe annulo flavo circumdata. Long. tota circa 8·5, alæ 4·7, caudæ 2·9, culm. 0·65, tarsi 0·7. (Descr. maris ex Yzabal, Guatemala. Mus. nostr.)

♀. Brunnea, uropygio, supracaudalibus et rectricibus medianis ferrugineis, his ad apicem nigricantibus; rectricibus reliquis nigris apicem versus plus minusve rufo adumbratis; alis dorso concoloribus, tectricibus alarum et secundariis intimis dorso concoloribus, maculis vel fasciis metallice æneis ornatis, his fasciis anguste et plus minusve distincte albido limbatis; remigibus nigricantibus, secundariis extus brunneo limbatis; pileo cum collo undique, gutture et præpectore brunneis, dorso concoloribus, his vix pallidioribus; fronte paullo dilutiore brunnea; loris et mento albis; corpore reliquo subtus cum subcaudalibus et axillaribus cinereis; abdomine imo albo; subcaudalibus ferrugineis, basin versus cinereis. Long. tota circa 8·5, alæ 4·5. (Descr. feminæ adultæ ex Choctum. Mus. nostr.)

♀ *juv.* feminæ adultæ similis, sed dorsi et præpectoris plumis rufo vel ochraceo marginatis, maculis ornamentalibus alarum sordidioribus nec metallicis.

Hab. Mexico, Tampico (*Richardson*[18]), Cordova (*Sallé*[4]), Playa Vicente (*Boucard*[5]), Jalapa (*Ferrari-Perez*[21]), city of Mexico (*White*[6]), Northern Yucatan (*Gaumer*[18]); British Honduras, Orange Walk, Belize (*Blancaneaux*[18]); Guatemala (*Constancia*[14]), sources of the Rio de la Pasion, Yzabal, Choctum (*O. S. & F. D. G.*[18]), Retalhuleu (*O. S.*[18], *Richardson*[18]); Honduras, Omoa (*Leyland*[7 8]), Truxillo (*Townsend*[17]); Nicaragua, Volcan de Chinandega (*Richardson*[18]), Los Sabalos, Rio San Juan (*Nutting*[15]), Rio Escondido (*Richmond*[19]); Costa Rica (*Carmiol*[18]),

* It seems to us undesirable to change the name *Peristera*, Swainson, under which genus *P. cinerea* has been known for the best part of a century, to *Claravis*, as has been proposed by Mr. Oberholser, on account of its having been used in 1815 in Mollusca, more especially as *Peristera*, Rafinesque, appears to be a synonym of the prior *Columbella*, Lamarck.

Las Trojas, Alajuela, San José, Naranjo de Cartago (*Zeledon* [16]), Miravalles, Laguna de Cartago, Talamanca, Tres Rios, Turrialba (*Underwood* [20], *in litt.*), Gulf of Nicoya (*v. Frantzius* [12]); PANAMA, La Barranca, Calovevora, Mina de Chorcha, Bugaba (*Arcé* [13 18]), Divala (*Brown* [24]), Lion Hill Station (*M'Leannan* [9 10], *Brown* [23]).—SOUTH AMERICA from Colombia to Brazil and Peru [18].

Although found in many localities within our limits, this Pigeon is apparently only migratory and is nowhere common. Mr. Richmond [19] first met with *P. cinerea* on the Escondido River, but it was resident there only part of the year; it was observed frequenting the bamboos on the banks of the streams or solitary trees in the plantations, usually in pairs, and was first noted on September 20th.

The specific name *cinerea* has been changed by Ferrari-Perez to *pretiosa*, because there was already a *Columba cinerea* of Scopoli; but this alteration seems unnecessary, as Scopoli's bird, if it is ever identified, would probably prove to belong to a different genus (*cf.* Salvadori, Cat. Birds, xxi. p. 638).

2. Peristera mondetoura.

Peristera mondetoura, Bp. Compt. Rend. xlii. pp. 765 [1], 957 [2]; Icon. Pig. t. 126 [3]; Lawr. Ann. Lyc. N. Y. ix. p. 139 [4]; v. Frantz. J. f. Orn. 1869, p. 371 [5]; Salv. Ibis, 1874, pp. 99 [6], 455 [7]; Sumichrast, La Nat. v. p. 232 [8]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [9]; Allen, Bull. Am. Mus. Nat. Hist. ii. p. 151 [10]; Salvad. Cat. Birds Brit. Mus. xxi. p. 495 [11].

Claravis mondetoura, Oberh. Pr. Acad. Philad. 1899, p. 203 [12]; Bangs, Pr. New Engl. Zool. Club, iii. p. 23 [13].

Peristera lansbergi, Schl. Mus. P.-B., Columbæ, p. 139 [14].

Supra saturate schistaceo-cinerea, pileo colloque et tectricibus alarum clarius cinereis, harum intimis maculis metallice purpureis, utrinque albido limbatis, pulchre ornatis; remigibus brunneis, cinereo extus marginatis et dorso concoloribus; supracaudalibus et rectricibus intimis schistaceis; reliquis cinereo-albis, extimis pure albis, basin versus schistaceo-nigris; fronte, loris, facie antica et mento albis; gutture et pectore saturate purpureo-castaneis; abdomine et subcaudalibus albis, ochraceo paullulum lavatis; corporis lateribus sordide cinerascenti-schistaceis; subalaribus nigricantibus: rostro nigro; pedibus sordide rubris, unguibus nigris; iride rufescenti-aurantiaca. Long. tota circa 8·4, alæ 4·5, caudæ 2·75, culm. 0·75, tarsi 0·85.

♀. Supra brunnea, dorso imo, uropygio et supracaudalibus magis ferrugineis; alis dorso concoloribus, et maculis purpureis sicut in mari ornatis; rectricibus nigris ad apicem brunneo vel brunnescenti-albo fasciatis; fronte, facie laterali et gula ferrugineis; gutture imo et pectore saturate cinerascenti-brunneis; abdomine albo; corporis lateribus et tibiis saturate brunneis; hypochondriis imis et subcaudalibus ochrascentibus; subalaribus et axillaribus nigricantibus, vix rufo lavatis. Long. tota circa 8·0, alæ 4·4. (Descr. maris et feminæ ex Calderas, Volcan de Fuego, Guatemala. Mus. nostr.)

Hab. MEXICO, Jalapa (*de Oca* [11]), Omealca, Vera Cruz (*Sumichrast* [8]); GUATEMALA, Calderas, Volcan de Fuego 7000 to 8000 feet (*O. S.* [6 11]); COSTA RICA, Birris (*v. Frantzius* [5], *Zeledon* [4]), Cartago (*Zeledon* [9]), Irazu (*Underwood, in litt.*); PANAMA, Boquete, Volcan de Chiriqui 3000 to 7000 feet (*Brown* [13]). — COLOMBIA [11]; VENEZUELA [11 14]; ECUADOR [11]; PERU [11].

This is one of the rarest and most beautiful of all the American Pigeons, and is

easily distinguished from *P. cinerea* by the broad white tips to the outer tail-feathers and by the maroon-coloured breast.

A male brought to us at Calderas, Guatemala, on the 9th of October, 1873, by a hunter, Julian Medio, had the soft parts as follows:—"Iris reddish-orange; bill black; tarsi and toes dull red; claws black."

Count Salvadori has pointed out that in the Mexican and Guatemalan birds the under wing-coverts are not cinnamon, but black. This we find to be the case, and as there is a gap in the geographical range of the species, it is possible that the Central-American form is distinct from that inhabiting South America; it must, however, be noted that we have not yet seen a specimen from Costa Rica.

Subfam. *GEOTRYGONINÆ.*

The Ground-Pigeons of this subfamily frequent forest-regions, and very much resemble Game-Birds in appearance. The wings are rounded as in the Peristerinæ, but not to the same extent, the primaries being decidedly longer than the secondaries; and they are without metallic spots or bands. The legs are very stout, and the tarsus is of considerable length, differing from that of the ordinary Pigeons and indicating the terrestrial habits of the group.

The genera which Count Salvadori includes in the Geotrygoninæ are nine in number, of which two occur in Central America, viz. *Leptoptila* and *Geotrygon*, the former with eleven out of nineteen known species, and the latter with seven out of seventeen; both are, therefore, largely represented within our limits. Of the others, *Haplopelia* is peculiar to Africa, *Osculatia* to South America, *Starnœnas* to Cuba and the Florida Keys, and *Phlogœnas*, *Leucosarcia*, *Eutrygon*, and *Otidiphaps* to Australia.

LEPTOPTILA.

Leptoptila, Swainson, Class. Birds, ii. p. 349 (1837); Salvadori, Cat. Birds Brit. Mus. xxi. p. 543 (1893).

The members of this genus have the first primary attenuated at the tip, and the tail is more than half the length of the wing (*cf.* Salvadori, *l. c.*).

The genus *Leptoptila* is somewhat largely represented in the Neotropical Region, and extends into the Southern United States. About twenty-five species are now recognized, but some of them are based on very slight differential characters.

1. Leptoptila brachyptera.

Peristera jamaicensis (part.), G. R. Gray, List Gallinæ Brit. Mus. p. 15 (1844) [1].
Zenaida amabilis (nec Bp.), M'Call, Pr. Acad. Philad. 1851, p. 220 [2].
Peristera brachyptera, G. R. Gray, List Columbæ Brit. Mus. p. 54 (1856) [3].
Leptoptila brachyptera (part.), Salvad. Cat. Birds Brit. Mus. xxi. p. 545 [4].

Leptoptila fulviventris brachyptera, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 122[5]; Chapm. Bull. Amer. Mus. viii. p. 287[6]; x. p. 35[7]; Nelson, N. Amer. Faun. no. 14, p. 36[8].

Leptoptila albifrons, Scl. (nec Bp.), P. Z. S. 1857, p. 214[9]; 1859, pp. 368[10], 391[11]; 1864, p. 178[12]; Scl. & Salv. Ibis, 1859, p. 222[13]; P. Z. S. 1870, p. 838[14]; Lawr. Mem. Bost. Soc. N. H. ii. p. 305[15]; Bull. U. S. Nat. Mus. no. 4, p. 44[16]; Coues, Bull. Nutt. Orn. Club, ii. p. 82[17]; Sanchez, An. Mus. Nac. Mex. i. p. 105 (part.)[18]; Sumichrast, La Nat. v. p. 232[19].

Æchmoptila albifrons (nec Bp.), Coues, Bull. U. S. Surv. Terr. iv. p. 48[20]; Ridgw. Pr. U. S. Nat. Mus. i. p. 158[21].

Engyptila albifrons, Coues, Bull. Nutt. Orn. Club, v. p. 100[22]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175[23]; Bendire, Life Hist. N. Amer. Birds, p. 144, t. 2. fig. 22[24].

Engyptila verreauxi (nec Bp.), Nutting, Pr. U. S. Nat. Mus. vi. pp. 378[25], 389[26], 396[27].

Engyptila vinaceifulva, Lawr. Ann. N. Y. Acad. Sci. iii. p. 270[28].

Engyptila sp., Jouy, Pr. U. S. Nat. Mus. xvi. p. 789[29].

Supra brunnea, vix olivascens, alis dorso concoloribus; remigibus sepiariis, anguste albido marginatis; secundariis intimis et rectricibus medianis dorso concoloribus, harum lateralibus intus et apicem versus nigricantibus, pallide brunneo terminatis, externis nigris late albo terminaliter fasciatis; fronte et loris albidis, vix vinaceo tinctis; pileo postico, collo postico et laterali metallice lilacinis, interdum viridi vel æneo-chalybeo nitentibus, interscapulio summo paullo viridi adumbrato; facie laterali et corpore subtus pallide vinaceis, gula summa alba, pectore imo pallidiore; abdomine et subcaudalibus albis; hypochondriis imis brunnescentibus, vix ochraceo lavatis; subalaribus et axillaribus cum remigibus intus castaneis: rostro nigro, regione nuda orbitali cærulescente; pedibus coccineis; iride alba. Long. tota circa 10·8, alæ 5·7, caudæ 5·0, culm. 0·9, tarsi 1·2. (Descr. maris ex San Gerónimo, Vera Paz. Mus. nostr.)

♀ mari similis, sed sordidior, rectricum fasciis albis terminalibus angustioribus. Long. tota circa 9·6, alæ 5·55. (Descr. feminæ ex Coatepec. Mus. nostr.)

Hab. North America, valley of the Lower Rio Grande in Texas[5].—Mexico, between Matamoros and Camargo (*M'Call*[2]), Nuevo Leon, Rio Salado, Estancia Monterey, Hacienda de los Escobas, Pesqueria Grande, Rio Gila, Monte Morelos (*Armstrong*[4]), Soto La Marina, Aldama, Tampico, Tamaulipas, San Blas, Santiago, Tepic, Lake Chapala, Tehuantepec (*Richardson*[4]), Sonora[4], Sierra Madre from Chihuahua to Jalisco[24], Santiago, Colima[4], Beltran[4] (*Lloyd*), Mazatlan (*Grayson*[15]), Jalisco, Barranca (*Jouy*[29]), Acapulco, Teapa (*Mrs. H. H. Smith*[4]), city of Mexico (*White*[12]), woods of both coasts[19], Santa Efigenia[16], Tehuantepec city[16] (*Sumichrast*), Cuesta de Misantla (*F. D. G. & Trujillo*[4]), Vega del Cazadero, Sochiapa (*Trujillo*[4]), Rancho del Ahuehuete, Puebla[23], Coatepec[4], Plan del Rio, Huatusco (*Ferrari-Perez*), Playa Vicente (*Boucard*[11], *Trujillo*[4]), Orizaba (*Botteri*[9]), Jalapa (*de Oca*[10], *Chapman*[7]), Yucatan (*Gaumer*[4]), Chichén-Itzá (*Chapman*[6]); Honduras, San Pedro (*Whitely*[14]); Guatemala, San Gerónimo, Dueñas, Barranco Hondo, Retalhuleu, and Pacific coast (*O. S. & F. D. G.*[13]), Toliman, Panajachel (*Richardson*[4]); Salvador, La Libertad (*Richardson*[4]); Nicaragua, Volcan del Chinandega (*Richardson*[4]), Ometépe I.[27], Sucuyá[26], Lake of Nicaragua, San Juan del Sur, Pacific coast[25] (*Nutting*).

In the west of the Isthmus of Tehuantepec, and at Mazatlan, Grayson found many nests of this bird.

In Guatemala it is a resident species, and was very abundant at Dueñas in 1861.

L. brachyptera is a somewhat shy ground-bird, frequenting the forests. Its food consists of seeds and fruit. Both sexes share in the duties of incubation; the nest is said by Grayson to be placed upon the ground, whereas Mr. Lloyd states that it is rather a substantial structure made of straw and placed in thorny shrubs at a height of from ten to twelve feet. As Grayson was also writing about the bird of the Tres Marias, as well as that of Mazatlan, his notes on the nesting may refer to the island-form. The eggs are two in number, creamy-buff in colour, with a smooth and glossy shell [24].

2. Leptoptila fulviventris.

Leptoptila brachyptera (nec Gray), Salvad. Cat. Birds Brit. Mus. xxi. p. 545 (part.) [1].

Leptoptila albifrons (nec Bp.), Lawr. Ann. Lyc. N. Y. ix. p. 207 [2]; Sanchez, An. Mus. Nac. Mex. i. p. 105 (part.) [3]; Boucard, P. Z. S. 1883, p. 459 [4].

Leptoptila fulviventris, Lawr. Ann. N. Y. Acad. Sci. ii. p. 287 [5].

Engyptila fulviventris, Lawr. Ann. N. Y. Acad. Sci. iii. p. 271 [6].

L. brachypteræ similis, sed abdomine et subcaudalibus ochrascenti-fulvis; hypochondriis quoque ochraceis, fronte vinaceo distinguenda; pedibus rubris; iride flava. Long. tota circa 10·5, alæ 5·5, caudæ 3·4, culm. 0·8, tarsi 1·1. (Descr. feminæ ex Tizimin, Yucatan. Mus. nostr.)

Hab. Mexico, Buctzotz, Izamal, Tizimin, Yucatan (*Gaumer* [1 4]), Merida (*Schott* [2]).

Although the characters for the separation of *L. fulviventris* are very slight, they appear to be constant, and we are therefore induced to regard the Yucatan bird as a distinct race of *L. brachyptera*. As Count Salvadori points out, however, the vinaceous forehead, which is one of the characters of *L. fulviventris*, is approached by specimens from other parts of Central America; but the ochraceous flanks are certainly different from the dark brown ones of *L. brachyptera*. We find, too, that the Tres Marias bird is more ochraceous than those from the Mexican mainland, but, as in other American Ground-Doves, the colour seems to vary in intensity, and some specimens are much paler than others.

It is probably to this Pigeon that Gaumer refers [4] when he says that it is common in all parts of Yucatan, building its nest on the drooping branch of a tree. The flight, though usually noiseless, is sometimes accompanied by a whistling sound.

3. Leptoptila capitalis.

Leptoptila albifrons, Grayson, Pr. Bost. Soc. N. H. xiv. p. 274 [1]; Lawr. Mem. Bost. Soc. N. H. ii. p. 305 (part.) [2].

Leptoptila brachyptera (part.), Salvad. Cat. Birds Brit. Mus. xxi. p. 545 [3].

Leptoptila capitalis, Nelson, Pr. Biol. Soc. Washington, xii. p. 6 [4]; N. Amer. Faun. no. 14, p. 36 [5].

L. brachypteræ similis, sed pallidior et rostro crassiore distinguenda. Long. tota circa 11·0, alæ 6·1, caudæ 3·95, culm. 1·0, tarsi 1·35.

♀ mari similis, sed subtus saturatius vinacea. Long. tota circa 10·3, alæ 5·7. (Descr. maris et feminæ ex insulis Tres Marias. Mus. nostr.)

Hab. Mexico, Tres Marias Is. (*Grayson* [1] [2], *Forrer* [3], *Nelson* [4] [5]).

We agree with Mr. Nelson in separating this Tres Marias Dove as a distinct species from *L. brachyptera* of the mainland, on account of its paler colour and stouter bill. Count Salvadori has remarked on the lighter shade of plumage of the birds from these islands, and there is no doubt that the back of the neck is of a more coppery-violet than in typical *L. brachyptera*. We have only one pair of *L. capitalis* in our collection, and both birds are somewhat darker than those from the mainland; this, however, may be accounted for by their preservation in spirits. Mr. Nelson [5] remarks that this Dove is very common on Maria Madre and Maria Magdalena, and probably also occurs on Maria Cleofa. He says that *L. capitalis* runs about like a small Quail in the quiet shade of the forest-trails, only disappearing into the thicket or noiselessly flying close to the ground if slightly disturbed, but if hard pressed it rises with a loud whirring sound and darts through the intricate mazes of the densest forest with an agility equalled by few other birds. In the heat of the day it retires to shady places, and usually perches amongst the densest foliage, from whence the birds call to each other at frequent intervals. During the breeding-season they may be seen in pairs keeping close together, but at other times they are solitary.

4. Leptoptila verreauxi.

Leptoptila verreauxi, Bp. Consp. Av. ii. p. 73 [1]; Lawr. Ann. Lyc. N. Y. vii. p. 333 [2]; ix. p. 137 [3]; Salv. P. Z. S. 1867, p. 159 [4]; 1870, p. 217 [5]; Ibis, 1874, p. 312 [6]; v. Frantzius, J. f. Orn. 1869, p. 371 [7]; Boucard, P. Z. S. 1878, p. 43 [8]; Salvad. Cat. Birds Brit. Mus. xxi. p. 548 [9]; Underwood, Ibis, 1896, p. 447 [10]; Bangs, Auk, 1901, pp. 25 [11], 358 [12]; Pr. New Engl. Zool. Club, iii. p. 23 [13].

Engyptila verreauxi, Nutting, Pr. U. S. Nat. Mus. v. p. 408 [14]; Ridgw. Pr. U. S. Nat. Mus. v. pp. 498 [15], 502 [16]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [17]; Cherrie, Auk, 1892, p. 329 [18].

Leptoptila albifrons (nec Bp., nec Scl.), Scl. & Salv. P. Z. S. 1864, p. 370 [19].

Leptoptila riottei, Lawr. Ann. Lyc. N. Y. ix. p. 137 [20]; v. Frantzius, J. f. Orn. 1869, p. 371 [21]; Salv. Ibis, 1874, p. 312 [22].

Præcedenti similis, sed pileo vinaceo antice pallidiore, remigibus intus plerumque castaneis, subalaribus concoloribus, et rectricum fascia alba terminali multo latiore distinguenda: rostro nigro; regione nuda orbitali rubra; pedibus rubris; iride aurantiaca. Long. tota circa 9·5, alæ 5·7, caudæ 3·9, culm. 0·85, tarsi 1·2. (Descr. maris ex Bugaba. Mus. nostr.)

♀. Haud a mari distinguenda. Long. tota circa 9·5, alæ 5·8. (Descr. feminæ ex San José, Costa Rica. Mus. nostr.)

Hab. Costa Rica [6] (*v. Frantzius* [7]), San José (*Carmiol* [3], *Boucard* [8], *Nutting* [15], *Cherrie* [18]), Barranca, Dota (*Carmiol* [3]), Navarro (*Cooper* [20]), Miravalles [10], Bellavista, Alajuela, San Lucas, Bebedero (*Underwood, in litt.*), Las Trojas, San Mateo, Cartago (*Zeledon* [17]), Volcan de Irazu [16], La Palma, Gulf of Nicoya (*Nutting* [14]); Panama,

Santa Fé [4 9], Calobre [5], Bugaba [5 9], Cordillera del Tolé [9] (*Arcé*), Divala, Chiriqui [12], San Miguel in the Pearl Is. [11] (*Brown*), Lion Hill Station (*M'Leannan* [2 9 19]).—COLOMBIA [1 9]; VENEZUELA [9]; TRINIDAD [9]; GUIANA [9]; ECUADOR [9]; PERU [9].

This species, originally described from Colombia [1], is also found in Venezuela and Guiana, and extends to Ecuador, Trinidad, and Peru. It is very plentiful in Costa Rica and Panama, where it frequents the second-growth woods. In the Gulf of Nicoya it is the common Dove of the region.

5. **Leptoptila gaumeri.**

Engyptila gaumeri, Lawr. Ann. N. Y. Ac. Sc. iii. p. 157 [1].
Leptoptila gaumeri, Salvad. Cat. Birds Brit. Mus. xxi. p. 557 [2].
Engyptila jamaicensis, Salv. Ibis, 1885, p. 193 [3]; 1889, p. 378 [4]; 1890, pp. 89, 91, 92, 93 [5].
Leptoptila brachyptera, Salvad. Cat. Birds Brit. Mus. xxi. p. 545 (part.) (spec. *g*, *i*) [6].

L. verreauxi similis, et remigibus intus castaneis, sed supra olivaceo-viridi lavata, et pilei collique coloribus diversis distinguenda; fronte albida, postice cana, pileo reliquo et collo postico vivide metallice lilacinis, hoc et interscapulio summo cupreis et chalybeo-viridi nitentibus. Long. tota circa 9·8, alæ 5·7, caudæ 3·3, culm. 0·9, tarsi 1·2. (Descr. avis adulti ex Cozumel I. Mus. nostr.)

Hab. MEXICO, Silam [1], Izamal [6], Merida [6], N. Yucatan [2], Jolbox I. [4], Mugeres I. [4] (*Gaumer*), Cozumel I. (*Devis* [2], *Gaumer* [2 3]).

Count Salvadori places this species in a section of the genus *Leptoptila* characterized by the bluish-grey crown. This, however, is a feature so liable to variation that we cannot accord much value to it, and, so far as we are able to judge, *L. gaumeri* is closely allied to *L. verreauxi*, having the same cinnamon quill-lining, and only differing in the colour of the head and the metallic neck.

L. gaumeri is found only in Yucatan and the adjacent islands of Cozumel, Jolbox, and Mugeres. There is no special record of its habits, though possibly some of the notes relating to *L. brachyptera* and *L. fulviventris* may refer to this species.

6. **Leptoptila plumbeiceps.** (Tab. LXVII. fig. 1.)

Leptoptila rufaxilla, Bp. (nec Rich. & Bern.), P. Z. S. 1837, p. 113 [1]; Scl. P. Z. S. 1856, p. 309 [2]; Salv. & Scl. Ibis, 1860, p. 402 [3].
Leptoptila plumbeiceps, Scl. & Salv. P. Z. S. 1868, p. 59 [4]; P. Z. S. 1870, p. 838 [5]; Schl. Mus. P.-B., Columbæ, p. 160 [6]; Salvad. Cat. Birds Brit. Mus. xxi. p. 550 [7].
Leptoptila bonapartii, Lawr. Ann. Lyc. N. Y. x. p. 15 [8]; Salv. Ibis, 1874, p. 312 [9].

Supra saturate chocolatino-brunnea, remigibus sepiariis, intus castaneis; rectricibus chocolatino-brunneis, dorso concoloribus, exterioribus nigris late albo terminatis; pileo plumbeo, fronte dilutiore, magis canescente; collo postico cinerascenti-plumbeo, lilacino adumbrato; facie laterali et corpore subtus saturate vinaceis; gula et abdomine toto cum hypochondriis imis et subcaudalibus albis; corporis lateribus pallide brunnescentibus; subalaribus, axillaribus et remigibus intus castaneis. Long. tota circa 9·5, alæ 5·5, caudæ 3·05, culm. 0·8, tarsi 1·2. (Descr. maris typici ex Choctum. Mus. nostr.)

♀ mari similis, sed saturatior, facie laterali, gutture et pectore brunnescenti-vinaceis. Long. tota circa 9·0, alæ 5·5. (Descr. feminæ ex Teapa. Mus. nostr.)

Juv. feminæ adultæ similis, sed notæi plumis ferrugineo marginatis.

Hab. Mexico [6 8], Tampico (*Richardson* [7]), Cordova (*Sallé* [2]), Atoyac, Vera Cruz, Teapa (*Mrs. H. H. Smith* [7]), Vega del Cazadero (*Trujillo* [7]), Valley of Mexico (*Le Strange* [7]); British Honduras, Orange Walk (*Gaumer* [7]), Cayo (*Blancaneaux* [7]); Guatemala, Vera Paz [3], Choctum [4 7] (*O. S.*); Honduras, San Pedro (*Whitely* [5]).

L. plumbeiceps belongs to another group of the genus *Leptoptila*, with rufous lining to the quills as in *L. verreauxi*, but with a nearly uniform crown of leaden grey. As with other species of the genus, considerable differences in the shades of the plumage are observable, and some specimens from Teapa and the Valley of Mexico are paler than birds from Guatemala and British Honduras, from which, however, one of the Atoyac examples cannot be separated. The females and young birds have a darker and browner vinaceous tint on the sides of the face and on the breast.

Nothing has been recorded respecting the habits and nidification of *L. plumbeiceps*, but they are doubtless similar to those of other members of the genus.

7. **Leptoptila cassini.** (Tab. LXVIII. fig. 1.)

Leptoptila verreauxi, Cassin (nec Bp.), Pr. Ac. Phil. 1860, p. 195 [1]; Lawr. Ann. Lyc. N. Y. vii. p. 333 [2].

Leptoptila sp. ?, Scl. & Salv. P. Z. S. 1864, p. 370 [3].

Leptoptila cassini, Lawr. Pr. Ac. Phil. 1867, p. 94 [4]; Ann. Lyc. N. Y. ix. p. 137 [5]; v. Frantzius, J. f. Orn. 1869, p. 371 [6]; Boucard, P. Z. S. 1878, p. 43 [7]; Rowley, Orn. Misc. iii. p. 79, t. 92 [8]; Salvad. Cat. Birds Brit. Mus. xxi. p. 560 [9]; Underwood, Ibis, 1896, p. 447 [10]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 9 [11]; Bangs, Proc. New Engl. Zool. Club, ii. p. 15 [12].

Engyptila cassini, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [13]; Richm. Proc. U. S. Nat. Mus. xvi. p. 523 [14].

Supra saturate olivaceo-brunnea, tectricibus alarum dorso concoloribus, remigibus sepiariis; rectricibus medianis dorso concoloribus, exterioribus nigris, rectrice externa albo terminata; fronte et facie laterali pallide vinaceo-cinereis, pileo postico saturatiore brunnescente; collo postico et laterali, gutture et pectore cinereis, illo metallice lilacino adumbrato; gula summa alba; pectore pulchre pallido lilacino; corporis lateribus et tibiis saturate brunneis; abdomine imo albido; subcaudalibus nigricantibus, apicem versus albis; subalaribus et axillaribus ferrugineis; remigibus intus paullo rufescentibus. Long. tota circa 9·0, alæ 5·4, caudæ 3·05, culm. 0·85, tarsi 1·2.

♀ *ad.* mari similis, sed ubique saturatior et magis obscure colorata; pileo dorso concolore, fronte cinerascente; colli postici et præpectoris colore sordide cineraceo. Long. tota circa 9·0, alæ 5·2. (Descr. maris et feminæ ex Lion Hill, Panama. Mus. nostr.)

Hab. Nicaragua, Rio Escondido (*Richmond* [14]); Costa Rica, San José (*Carmiol* [5]), Tucurriqui (*v. Frantzius* [6], *Zeledon* [5]), Pacuare, Jiménez (*Zeledon* [13]), San Carlos (*Boucard* [7 8]), Miravalles [10], Cartago, Carrillo (*Underwood*); Panama [4], Montaña del Vermejo (*Arcé* [9]), Lion Hill Station (*M'Leannan* [2 3 9], *Brown* [12]), forest near Laguna de la Pita (*Festa* [11]).—Colombia, Turbo, Rio Truando (*Wood* [1]).

L. cassini and its allies constitute the short-tailed group of the genus *Leptoptila* with a vinous-grey breast. This species was first described from the Rio Truando, and has been since found in the State of Panama, Costa Rica, and Nicaragua. M. Boucard [7] procured specimens in the valley of San Carlos at an altitude of 5000 feet, and found the bird nesting there in small trees, the male performing the duties of incubation. On the Volcano of Miravalles it was observed in numbers by Mr. Underwood, and is described as a ground- and forest-loving bird. The eggs are white and two in number.

8. **Leptoptila vinaceiventris.**

Engyptila vinaceiventris, Ridgw. Pr. U. S. Nat. Mus. x. p. 583 [1]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 523 [2].

Leptoptila vinaceiventris, Salvad. Cat. Birds Brit. Mus. xxi. p. 561 [3].

L. cassini simillima, sed paullo pallidior, olivaceo-brunnea, vix lilacino lavata; collo postico pallide cinereo; pileo pallide rufescenti-brunneo, fronte dilute vinaceo-cinerea; præpectore dilute cinereo; pectore et abdomine summo pallide vinaceis, cinereo lavatis: rostro nigro; loris et regione orbitali nudis rubris; pedibus saturate rubris; iride flava. Long. tota circa 10·0, alæ 5·3, caudæ 3·1, culm. 0·95, tarsi 1·3. (Descr. maris ex La Libertad, Chontales. Mus. Brit.)

Hab. Honduras, Truxillo (*Townsend* [1]); Nicaragua, La Libertad, Chontales [3], Rio Coco (*Richardson*), Rio Escondido (*Richmond* [2]).

This form, as Count Salvadori has pointed out, is intermediate between *L. cassini* and *L. cerviniventris*. The chest is of a lighter grey, and the vinaceous colour of the breast is paler and tinged with grey. One of Mr. Richardson's birds from Chontales was compared by Count Salvadori with the type, and we have another since received from the Rio Coco; the latter is darker and closely resembles a Miravalles specimen of *L. cassini*.

The habits of this species are doubtless similar to those of other members of the genus *Leptoptila*.

9. **Leptoptila cerviniventris.** (Tab. LXVII. fig. 2.)

Leptoptila sp. ?, Salv. Ibis, 1861, p. 355 [1].

Leptoptila cerviniventris, Scl. & Salv. P. Z. S. 1868, p. 59 [2]; Salvad. Cat. Birds Brit. Mus. xxi. p. 561 [3].

Leptoptila cassini, Schl. (nec Lawr.), Mus. P.-B., Columbæ, p. 159 [4].

L. cassini similis, sed præpectoris colore cinereo magis restricto, pectore toto et abdomine summo vinaceo-cervinis distinguenda. Long. tota circa 8·6, alæ 5·3, caudæ 3·0, culm. 0·8, tarsi 1·25. (Descr. spec. typ. ex Choctum. Mus. nostr.)

Hab. British Honduras, Cayo (*Blancaneaux* [3]); Guatemala, Vera Paz (*Owen* [1 2]), Choctum (*O. S.*).

This is merely a race of *L. cassini*, very difficult to distinguish from that species and *L. vinaceiventris*, as the latter is intermediate. The grey on the hind part of the neck, so distinct in *L. cassini*, is here almost wanting, the grey shade on the throat and front

of the neck is more restricted, and the vinous colour of the breast extends higher up than in that species.

10. **Leptoptila rufinucha.** (Tab. LXVIII. fig. 2.)

Leptoptila rufinucha, Scl. & Salv. Nomencl. Av. Neotr. pp. 134[1], 162[2]; Salvad. Cat. Birds Brit. Mus. xxi. p. 562[3]; Bangs, Auk, 1901, p. 358[4].
Engyptila rufinucha, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127[5].
Leptoptila cassini (nec Lawr.), Salv. P. Z. S. 1870, p. 217[6].

Saturate chocolatino-brunnea, interscapulio vix rufescente; alis dorso concoloribus, remigibus sepiariis, intus ferrugineis; collo undique sordide cinerascente, gula albida; fronte albida, postice cana; pileo postico et nucha vivide cinnamomeis; pectore imo et abdomine pallide vinaceis; corporis lateribus saturate brunneis; abdomine imo et subcaudalibus albis, his extus nigricantibus; subalaribus et axillaribus ferrugineis; rectricibus medianis dorso concoloribus, externis nigris, rectrice extima albo terminata: rostro nigro; pedibus rubris. Long. tota circa 8·5, alæ 5·35, caudæ 3·2, culm. 0·65, tarsi 1·15. (Descr. maris ex Volcan de Chiriqui. Mus. nostr.)

♀ *ad.* mari similis, sed ubique saturatior. Long. tota circa 8·5, alæ 5·2.

Hab. Costa Rica, Pozo Azul (*Zeledon*[5], *Underwood*), Las Trojas, Alajuela (*Zeledon*[5]), Candelaria, Pacific low-lands, Pozo Pital, Tambor, Pirris (*Underwood, in litt.*); Panama, Volcan de Chiriqui, Bugaba (*Arcé*[2 6]), Divala (*Brown*[4]), Veragua (*Arcé*[1]).

This is a fairly well-marked form of the grey-chested *Leptoptilæ*, distinguished by its clear rufous nape. Nothing is known of its habits.

11. **Leptoptila battyi.**

Leptoptila battyi, Rothsch. Bull. B. O. C. xii. p. 33 (Dec. 1901)[1].

L. cassini et *L. rufinuchæ* similis, sed minime olivascens: supra brunnescenti-castanea, purpureo nitens; pileo nuchaque pallide schistaceis distinguenda. Long. tota circa 10·0, alæ 5·5, caudæ 3·65, culm. 0·65, tarsi 1·25. (Descr. maris adulti typ. ex Coiba I. Mus. Rothschild.)

Hab. Panama, Coiba I.[1].

This is a very distinct species, belonging to the short-tailed group of the genus.

GEOTRYGON.

Geotrygon, Gosse, Birds of Jamaica, p. 316 (1847); Salvad. Cat. Birds Brit. Mus. xxi. p. 564 (1893).

This genus differs from *Leptoptila* in not having the first primary attenuated at the tip. All the species are very Galline in appearance, resembling Partridges. The tarsus in the species of *Geotrygon* is covered with transverse scales in front, and the rather short tail consists of twelve feathers.

Of the eighteen species enumerated by Count Salvadori, six are confined to Central America, and a seventh, *G. montana*, is of wide distribution throughout the Neotropical Region. The others are either strictly South American, or else confined to the West-Indian Islands.

1. Geotrygon albiventer.

Geotrygon violacea (nec Temm. & Knip), Lawr. Ann. Lyc. N. Y. vii. p. 477 [1]; Salvad. Cat. Birds Brit. Mus. xxi. p. 565 (part.) [2]; Underwood, Ibis, 1896, p. 447 [3].

Geotrygon albiventer, Lawr. Pr. Ac. Phil. 1865, p. 108 [4]; Ann. Lyc. N. Y. ix. pp. 135 [5], 149 [6].

Supra vinaceo-rubescens, collo postico et interscapulio metallice purpureo-cyaneo micantibus; alis caudaque dorso concoloribus, remigibus et rectricibus castaneis, intus brunneis; fronte vinacea, pileo et nucha sordide rubescentibus, antice vix cyaneo lavatis; loris et facie laterali pallide vinaceis; gula alba; colli lateribus et præpectore vinaceis, cinereo lavatis et vix cyaneo micantibus; corpore reliquo subtus pure albo; corporis laterum plumis nonnullis et subalaribus interioribus albis, ad basin nigricantibus; subalaribus extimis castaneis. Long. tota circa 9·0, alæ 5·75, caudæ 2·7, culm. 0·65, tarsi 1·0. (Descr. avis adulti ex Panama. Mus. nostr.)

Hab. Costa Rica, Angostura (*Carmiol* [5]), Volcan de Miravalles (*Underwood* [1 2]); Panama, Lion Hill Station (*M'Leannan* [4 6]).

This species is distinguished by the cinnamon-colour of the tail, and also by the cinnamon-rufous on the quills, and by the white belly. Count Salvadori did not fail to remark on the curious fact that it appeared to be identical with the Brazilian *G. violacea*, though there had been no record of the occurrence of the species in any intervening part of South America. He could not find any character wherewith to separate the Brazilian and Panama birds specifically, a single specimen only from the last-named locality was, however, available for comparison. We have now received two more examples from Mr. Underwood, and, in addition to the characters given above, we believe that the Central-American form can be specifically separated from the true *G. violacea* by its more vinous forehead and cheeks, and by the intense violet-blue on the mantle, which is much more pronounced than in the Brazilian bird. We had the opportunity, in 1892, through the courtesy of Prof. J. A. Allen, of comparing Lawrence's type with our own Panama specimen; the former was immature, but both evidently belonged to the same species.

Like most of the species of *Geotrygon*, this bird is seldom found in collections, and very little is known of its habits. It is recorded from Panama and Costa Rica, and in the last-mentioned country it is said by Mr. Underwood to be very rare. He procured specimens during one of his rambles on the Volcano of Miravalles, where small flocks of from four to six were observed in the thick woods, some being shot when feeding on the ground, and others on low branches of trees [3].

2. Geotrygon montana.

Columba montana, Linn. Syst. Nat. i. p. 281 [1].

Geotrygon montana, Gosse, Birds of Jamaica, p. 320 [2]; Scl. P. Z. S. 1856, p. 309 [3]; 1859, p. 368 [4]; Scl. & Salv. Ibis, 1860, p. 401 [5]; Lawr. Ann. Lyc. N. Y. ix. p. 135 [6]; v. Frantz. J. f. Orn. 1869, p. 371 [7]; Salv. P. Z. S. 1870, p. 217 [8]; Boucard, P. Z. S. 1878, p. 43 [9]; Sumichrast, La Nat. v. p. 232 [10]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [11]; Bendire, Life Hist. N. Amer. Birds, i. p. 154 [12]; Salvad. Cat. Birds Brit. Mus. xxi. p. 567 [13]; Underwood,

Ibis, 1896, p. 447[14]; Bangs, Auk, 1901, p. 358[15]; Pr. New Engl. Zool. Club, iii. p. 23[16].

Geotrygon —— ?, Scl. & Salv. P. Z. S. 1864, p. 370[17].

Rufescens, violaceo micans; alis caudaque dorso concoloribus; remigibus rufis, intus et ad apicem brunnescentibus; rectricibus exterioribus fulvo vix terminatis, et intus subterminaliter brunnescentibus; pileo, facie laterali et colli lateribus dorso concoloribus et eodem modo violaceo micantibus; corpore subtus pallide vinaceo, gutture et abdomine medio albidis; hypochondriis et subcaudalibus ochracescenti-rufis, his pallidioribus; subalaribus rufis; axillaribus magis ochracescentibus basin versus nigris: rostro corneo, ad basin coccineo; pedibus rubescenti-albis, scutis magis coccineis; plaga nuda oculari et palpebris coccineis; iride sordide aurantiaca. Long. tota circa 9·0, alæ 5·7, caudæ 3·0, culm. 0·6, tarsi 1·2.

♀ mari dissimilis; saturate brunnea, olivaceo-viridi nitens; remigibus et rectricibus fuscescenti-brunneis, intus rufescentibus; pileo postico dorso concolore; fronte, superciliis et genis anticis castaneis; facie laterali reliqua et colli lateribus saturate fuscis; corpore reliquo subtus sordide rufescente, gutture et abdomine cum subcaudalibus albidis; subalaribus rufis, axillaribus ad basin nigris. Long. tota circa 8·5, alæ 5·7. (Descr. maris et feminæ ex Choctum. Mus. nostr.)

Hab. North America, Key West, Florida[12].—Mexico, Mirador (*Sartorius*[12]), Vega del Casadero, Vera Cruz (*Trujillo*[13]), Cordova (*Sallé*[3]), Jalapa (*de Oca*[4]), Potrero, Chiquihuite (*Sumichrast*[10]), Temax, N. Yucatan (*Gaumer*[13]); British Honduras, Orange Walk (*Blancaneaux*[13]); Guatemala, Vera Paz[5], Choctum, Savana Grande (*O. S. & F. D. G.*[13]); Nicaragua, La Libertad, Chinandega (*Richardson*[13]); Costa Rica, Angostura (*Carmiol*[6], *Zeledon*[11]), Orosi (*v. Frantzius*[7]), Savanilla de Pirriz (*Underwood, in litt.*), San Carlos (*Boucard*[9]), Birris de Cartago (*Zeledon*[11]), Volcan de Miravalles (*Underwood*[14]); Panama, Divala, Boquete (*Brown*[15 16]), southern slopes of the Volcan de Chiriqui (*Arcé*[8 13]), San Pablo Station (*O. S.*[13]).—Ecuador[13]; Amazonia[13]; Guiana[13]; Brazil[13]; Greater and Lesser Antilles[13].

Like *G. albiventer*, this species has the under wing-coverts and the quill-linings cinnamon or light chestnut, and the tail also dark cinnamon, but the abdomen is rufous, like the rest of the underparts. *G. montana* is a forest-bird, and on the mainland is nowhere abundant, though on some of the West-Indian Islands, as in Cuba and Jamaica, it is more plentiful. Here it frequents the forests, feeding on seeds, berries, and small slugs. Gosse describes the nest as a rude structure composed of sticks and dead leaves placed on bushes at a height of from three to five feet from the ground[2]. The eggs are two in number, but are rather more rounded than is usual with Pigeons, of a pale cream or pink-buff colour[12].

3. **Geotrygon lawrencii.** (Tab. LXIX.)

Geotrygon veraguensis, Salv. (nec Lawr.), P. Z. S. 1867, p. 159[1].

Geotrygon lawrencii, Salv. Ibis, 1874, p. 329[2]; Salvad. Cat. Birds Brit. Mus. xxi. p. 576[3].

Geotrygon costaricensis, Bangs, Pr. New Engl. Zool. Club, iii. p. 24[4].

Supra sordide olivaceo-brunnea; fronte et loris pure albis; vertice canescente, pileo postico cum collo postico et laterali sordide olivascente, dorso medio purpurascente; alis olivascenti-brunneis, minoribus purpureo lavatis; remigibus nigricantibus, intus cinereis; rectricibus medianis dorso concoloribus, externis nigricantibus ad apicem cineraceis; facie laterali et gutture pure albis, linea infra lorali nigra, et fascia altera mystacali nigra; præpectore et pectore toto clare cinereis; abdomine et subcaudalibus albis, his basaliter

nigris vel cinereis ; corporis lateribus et tibiis brunneis ; subalaribus et axillaribus nigricantibus brunneo lavatis, remigibus infra sordide cinereis : rostro nigro ; pedibus rubris. Long. tota circa 9·0, alæ 5·6, caudæ 2·5, culm. 0·75, tarsi 1·55. (Descr. avis typ. ex Veragua. Mus. nostr.)

Juv. adultis similis, sed ubique sordidior, fronte cineracea ; corpore subtus sordide brunneo, plumis singulis anguste ochraceo marginatis.

Hab. Panama, Santa Fé [2], Calobre (*Arcé* [1 3]), Boquete and Volcan de Chiriqui, 7000–10,000 feet (*Brown* [4]).

This species has the quill-linings ashy, not rufous, and is also distinguished by the grey chest and breast, as well as by the pure white forehead, face, and throat, with a distinct moustachial line of black.

Its habits doubtless do not differ from those of the other Ground-Pigeons of the forest-regions, but nothing has been recorded on the subject.

4. Geotrygon costaricensis.

Geotrygon costaricensis, Lawr. Ann. Lyc. N. Y. ix. p. 136 [1] ; v. Frantz. J. f. Orn. 1869, p. 371 [2] ; Rowley, Orn. Misc. iii. p. 45, t. 87 [3] ; Boucard, P. Z. S. 1878, p. 43 [4] ; Ridgw. Pr. U. S. Nat. Mus. v. pp. 498 [5], 502 [6] ; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127 [7] ; Salvad. Cat. Birds Brit. Mus. xxi. p. 577 [8].

Supra saturate purpurascenti-rufa, violaceo lavata. *G. lawrencii* similis, sed regione parotica postica cinereo lavata, collo postico clariore viridi, et pectore lætiore cinereo distinguenda. Long. tota circa 10·0, alæ 5·6, caudæ 2·7, culm. 0·8, tarsi 1·4.

♀ mari similis, sed supra sordide olivascenti-brunnea, dorso medio purpuraceo vix a femina *G. lawrencii* distinguenda. Long. tota circa 10·0, alæ 5·6. (Descr. maris et feminæ ex Cartago, Costa Rica. Mus. Brit.)

Hab. Costa Rica [1], San José (*Van Patten* [6]), Las Cruces de la Candelaria [2] (*v. Frantzius*), Candelaria Mts. (*Boucard* [3 4]), Volcan de Irazu (*Nutting* [5]), Azahar de Cartago, Estrella de Cartago, Turrialba, Carillo (*Underwood, in litt.*), Rancho Redondo (*Zeledon* [7]).

The true *G. lawrencii* is replaced in Costa Rica by this species. We have only been able to compare females of the two forms, having no fully adult male of *G. lawrencii* before us; but there can be no doubt that the Costa Rican bird is much paler in colour than its Panama representative, both as regards the grey of the chest and the green of the mantle. The male has the upper surface purplish-red, and the corresponding sex of *G. lawrencii* will doubtless be found to be similar, but probably of a deeper tint.

M. Boucard [4] found *G. costaricensis* on the Candelaria Mountains, at a height of 3000 to 4000 feet; the birds were always on the ground, scratching, like chickens, in search of insects and seeds. Mr. Nutting [5] says that they were not very common on the Volcan de Irazu, and were met with only in the densest parts of the forest.

5. Geotrygon veraguensis. (*G. rufiventris*, Tab. LXX.)

Geotrygon veraguensis, Lawr. Ann. Lyc. N. Y. viii. p. 349 [1] ; Salv. Ibis, 1874, p. 328, t. 12 [2] ; Salvad. Cat. Birds Brit. Mus. xxi. p. 575 [3].

Geotrygon rufiventris, Lawr. Ann. Lyc. N. Y. xi. p. 90 [4] ; Rowley, Orn. Misc. iii. p. 77, t. 93 [5].

G. lawrencii similis, sed olivascenti-brunnea, pileo postico cum collo postico et laterali sordide purpureo, olivaceo vel æneo nitente; fronte alba, vertice canescente; facie laterali et gula albis; pectore toto sordide cinereo, purpureo et olivaceo nitente; abdomine et subcaudalibus ochraceis, hypochondriis brunnescentibus; subalaribus et remigibus intus cinnamomeis. Long. tota circa 8·5, alæ 5·3, caudæ 2·6, culm. 0·75, tarsi 1·4. (Descr. avis adulti ex Veragua. Mus. nostr.)

Hab. Costa Rica, Talamanca (*Cooper* [4]); Panama, Agua Dulce (*Boucard* [3 5]), Veragua (*Merritt* [1 2], *Arcé* [3]), Montaña del Vermejo (*Arcé* [3]).

Though at first sight similar to *G. lawrencii*, this species is distinguished by several trenchant characters, especially the cinnamon-colour on the lining of the quills, a feature which has induced Count Salvadori to place *G. veraguensis* in a separate section of the genus *Geotrygon*, apart from *G. lawrencii*. It differs from the latter in its more dingy colour above and in the dull grey breast, but especially in the ochraceous hue of the abdomen and under tail-coverts; otherwise, in the white face and its peculiar markings, the affinity of *G. veraguensis* with *G. lawrencii* is very evident.

It has been pointed out [3] that some of the specimens in the British Museum show a tinge of rufous on the forehead and cheeks, and that they have no grey on the vertex; these, he thinks, are probably females. Such an example formed the type of Lawrence's *G. veraguensis*, which was examined by Salvin in America, and was also lent by Professor J. A. Allen to Count Salvadori. Salvin made a sketch of the type, when it was "under glass" in Dr. Merritt's possession, and from this sketch the plate in the 'Ibis' was drawn [2]. This plate was not quite accurate as regards some small details, to which attention has already been drawn [3].

G. rufiventris was described by Lawrence from Costa Rica [4], but it has not been met with again in that country, and all our specimens have been obtained from Panama. There can, however, be little doubt that *G. rufiventris*, of which we give a figure, is the same as *G. veraguensis*, as determined by Count Salvadori, though we have never had any Costa Rican specimens before us.

M. Boucard met with this Ground-Dove at Agua Dulce, in the State of Panama, and states that it was rather rare and difficult to detect, frequenting the ground in the tropical forests and feeding upon seeds and, probably, insects. *G. veraguensis* was originally discovered by Dr. Merritt in the district of El Mineral de Veraguas, on the north-eastern slope of the Cordillera, to the south-eastward of the Chiriqui Lagoon, a locality which he described to Salvin as being exceedingly humid and entirely clothed with the densest tropical forest; there the bird was quite common.

6. Geotrygon albifacies.

Peristera mexicana, G. R. Gray, List Gallinæ Brit. Mus. p. 15 (1844) (descr. nulla) [1].

Peristera albifacies, G. R. Gray, List Columbæ Brit. Mus. p. 55 (1856) (descr. nulla) [2].

Geotrygon albifacies, Scl. P. Z. S. 1858, p. 98 [3]; 1859, pp. 368 [4], 391 [5]; Scl. & Salv. Ibis, 1860, p. 401 [6]; Ex. Orn. p. 123 [7]; Sumichr. La Nat. v. p. 232 [8]; Ridgw. Man. N. Am. B. p. 217 [9]; Salv. & Godm. Ibis, 1892, p. 328 [10]; Salvad. Cat. Birds Brit. Mus. xxi. p. 581 [11].

Starnœnas albifacies, Schl. Mus. P.-B., Columbæ, p. 164[12].

Geotrygon chiriquensis (nec Scl.), Bp. Compt. Rend. xliii. pp. 943[13], 949[14]; Scl. P. Z. S. 1857, p. 206[15]; Scl. & Salv. Ex. Orn. p. 77, t. 39[16].

Geotrygon caniceps (part.), Bp. Compt. Rend. xliii. pp. 943[17], 949[18].

Vinaceo-rufa, interscapulio chalybeo-viridi vel cyaneo nitente; alis caudaque vinaceo-rufis; ala spuria, tectricibus primariorum primariisque sepiariis, intus cinereis; pileo antico et facie laterali albicantibus vinaceo tinctis, vertice cinerascente et pileo postico vinaceo-rufo, collo postico et laterali magis rufescente, plumis singulis nigro limbatis; facie laterali pallide vinacea, linea infra lorali et altera angusta mystacali nigris; gula summa albida, gutture imo squamato, plumis anguste nigro marginatis; corpore reliquo subtus ochracescente, præpectore et pectore vinaceo lavatis; corporis lateribus et subcaudalibus saturate ochracescentibus; abdomine pallidiore; subalaribus castaneis; axillaribus sordide cinereis, rufo lavatis; remigibus infra fuscis, intus cinereis. Long. tota circa 12·5, alæ 6·3, caudæ 3·6, culm. 0·7, tarsi 1·5. (Descr. maris typ. ex Savana Grande. Mus. nostr.)

♀ *ad.* a mari vix distinguenda, coloribus forsan sordidioribus. Long. tota circa 12·0, alæ 6·1. (Descr. feminæ ex Volcan de Fuego. Mus. nostr.)

Hab. Mexico (*Mus. Brit.*[1 2]), Mirador (*Sartorius*[9]), Chilpancingo, Guerrero (*Mrs. H. H. Smith*[11]), Cordova and Orizaba, Vera Cruz (*Sumichrast*[8]), Jalapa (*Sallé*[3 14], *de Oca*[4]), Latani, Oaxaca (*Boucard*[5]), Coatepec (*Ferrari-Perez*[11], *Trujillo*[11]), Cuesta de Misantla (*F. D. G.*[11]); Guatemala, forests of Vera Paz[6], Choctum[11], Volcan de Fuego[11], Savana Grande[11] (*O. S. & F. D. G.*), Pie de la Cuesta, El Rincon, San Martin, Atitlan, Sierra de las Minas (*Richardson*[11]); Honduras, Danli (*Richardson*); Nicaragua, Jali, Matagalpa[10 11], San Rafael del Norte (*Richardson*[11]).

The typical specimen of *Peristera mexicana* (=*P. albifacies*) is in the British Museum. It was not described by Gray, who, after the manner of the period, published the name in his 'Lists' of Gallinæ and Columbæ, considering this sufficient. The example in question is much decayed and seems not to have been properly preserved; all the feathers of the head have perished, and it is impossible to identify this skin with any special race of *Geotrygon*.

Count Salvadori[11] has already drawn attention to the difference between Mexican specimens and those from other parts of Central America, and it is certain that the former have, as a rule, greyer heads than those from Guatemala and Nicaragua. He writes:—"The Mexican birds are much more grey on the occiput, where the median patch, instead of being golden-purple, is purple-grey; the transition, however, is so gradual that I have not been able to separate the two forms." Our own examination of the large series in the British Museum confirms Count Salvadori's conclusion. Several specimens from Coatepec, Vera Cruz, have a dull plumbeous-grey head, darkening somewhat on the occiput. We have in our collection similar examples from Danli in Honduras, the Volcan de Fuego and the Sierra de las Minas in Guatemala, and from Matagalpa in Nicaragua. Others with a white forehead and a vinaceous occiput are in our possession from the Volcan de Fuego, Choctum, Atitlan, El Rincon, and San Martin in Guatemala, and from San Rafael del Norte in Nicaragua.

It will therefore be seen that both dark- and light-fronted forms occur in the same countries, while examples from Jalapa and Jali in Nicaragua are intermediate. Climatic influences are perhaps responsible for the intensity of colour in certain specimens, and judging from the evidence at present at our disposal we agree with Count Salvadori as to the impossibility of dividing *G. albifacies* into two species or races.

Beyond the fact that this, like other species of *Geotrygon*, is an inhabitant of forest-districts, there is no record of its habits.

7. Geotrygon chiriquensis.

Geotrygon chiriquensis, Scl. P. Z. S. 1856, p. 143[1]; Salv. P. Z. S. 1867, p. 159[2]; 1870, p. 217[3]; Scl. & Salv. Ex. Orn. p. 123, t. 62[4]; Boucard, P. Z. S. 1878, p. 43[5]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 127[6]; Salvad. Cat. Birds Brit. Mus. xxi. p. 579[7]; Bangs, Pr. New Engl. Zool. Club, iii. p. 24[8].

Geotrygon cæruleiceps, Lawr. Ann. Lyc. N. Y. ix. pp. 136[9], 148[10]; v. Frantz. J. f. Orn. 1869, p. 371[11]; Salv. Ibis, 1869, p. 317[12].

G. albifaciei similis, sed saturatior et magis castanea; pileo plumbescente, fronte vix dilutiore; plumis squamatis colli postici gutturisque absentibus; corpore subtus castaneo vel saturate cinnamomeo, abdomine magis ochrascente, gutture albicante. Long. tota circa 10·2, alæ 6·0, caudæ 3·4, culm. 9·8, tarsi 1·65. (Descr. maris ex Castillo, Veragua. Mus. nostr.)

Hab. Costa Rica, Cervantes (*v. Frantzius*[11], *Zeledon*[9]), El Zarcero de Alajuela (*Zeledon*[6]), La Candelaria (*Zeledon*[6], *Boucard*[5]), Volcan de Irazu (*Boucard*[5]), Tarrazu (*Underwood, in litt.*); Panama, David (*Bridges*[12]), Castillo, Calovevora, Calobre, Volcan de Chiriqui (*Arcé*[3 7]), Boquete and Volcan de Chiriqui 4500 to 10,000 feet (*Bronn*[8]).

This is a southern representative of *G. albifacies*. M. Boucard[5] says that the "Paloma del Monte," which is the name by which it is known to the Spaniards, is very scarce in Costa Rica, and that it keeps entirely to the ground. Nothing further has been recorded respecting its habits.

Order GALLINÆ*.

This Order includes the majority of the species commonly known as "Game"-Birds, such as Grouse, Quails, Partridges, Pheasants, Turkeys, and Curassows, all of which exhibit the following characters:—The nasals are holorhinal, and true basipterygoid processes are absent, but represented by sessile facets situated far forward on the sphenoidal rostrum. The episternal portion of the sternum is perforated to receive a process from the base of the coracoids, and there are two deep notches on each side of

* I have to acknowledge the assistance of Mr. Ogilvie-Grant in the preparation of the MSS. of the Gallinæ.

the posterior margin of the sternum. The bill is short and stout, the upper mandible being arched and overhanging the lower one. The hind toe is always present. The nestlings when hatched are covered with down, and are able to run a few hours afterwards.

Suborder PERISTEROPODES.

This Suborder comprises the Curassows, Penelopes, and Guans, all of which are strictly Neotropical, if we except *Ortalis vetula*, which extends north of the Rio Grande. Like the true Game-Birds, the Cracidæ have a schizognathous palate and schizorhinal nostrils, as well as a tufted oil-gland, but the inner notch of the sternum is less than half the length of the entire sternum, and a striking feature is the position of the hind toe or hallux, which is on the same level as the fore toes, its basal phalanx being as long as that of the third one.

Fam. CRACIDÆ.

The characters which distinguish this family are the same as those of the Suborder. The Cracidæ are peculiar to the New World, and are remarkable not only for the anatomical characters enumerated above, but for their manner of breeding. Instead of placing their nest on the ground, as is the usual custom with most Game-Birds, the Curassows and Guans build in trees and lay white eggs.

Subfam. *CRACINÆ*.

Upper mandible higher than broad.

CRAX.

Crax, Linn. Syst. Nat. i. p. 269 (1766); Grant, Cat. Birds Brit. Mus. xxii. p. 474 (1893).

The Curassows are characterized by their very short bill, the height of the upper mandible being greater than its width, and the feathers on the top of the head are semi-erect and curled at the extremity. In some species there is a swollen knob at the base of the culmen, with a pair of wattles at the base of the lower mandible. The tail-feathers are twelve in number. In this genus the females are different in colour from the males, the latter being almost alike in plumage. Eleven species have been recorded, only three of which are found in Central America, the others being peculiar to various districts of South America.

1. Crax globicera.

Crax globicera, Linn. Syst. Nat. i. p. 270 [1]; Scl. P. Z. S. 1860, p. 253 [2]; Tr. Z. S. ix. p. 274, t. 40 (part.) [3]; Taylor, Ibis, 1860, p. 311 [4]; Salv. Ibis, 1861, p. 143 [5]; 1889, p. 378 [6]; 1890,

p. 89 [7]; Scl. & Salv. P. Z. S. 1870, pp. 513, 838 [8]; Sumichr. La Nat. ii. p. 37 [9]; v. p. 229 [10]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 44 [11]; Boucard, P. Z. S. 1883, p. 459 [12]; Ridgw. Pr. U. S. Nat. Mus. viii. p. 581 [13]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175 [14]; Grant, Cat. Birds Brit. Mus. xxii. p. 478 [15]; Handb. Game-Birds, ii. p. 203 [16].

Crax rubra, Linn. Syst. Nat. i. p. 270 [17].

Crax alector (nec Linn.), Lath. Ind. Orn. ii. p. 623 [18]; Scl. & Salv. Ibis, 1859, p. 223 [19]; Moore, P. Z. S. 1859, p. 61 [20].

Crax temmincki, Tschudi, Faun. Per. p. 287 [21].

Crax pseudalector, Reichenb. Tauben, p. 131, t. 174. figs. 15, 16 [22].

Crax edwardsi, Reichenb. loc. cit. p. 134 [23].

Nigra, viridi adumbrata; abdomine medio, hypochondriis et subcaudalibus albis: rostro nigricanti-corneo, tubere flavo internasali instructo; pedibus grisescenti-corneis; iride saturate brunnea. Long. tot. circa 35·0, alæ 15·7, caudæ 14·0, tarsi 4·6. (Descr. maris adulti ex N. Yucatan. Mus. nostr.)

♀ mari dissimilis; pileo, collo et gutture nigris alboque fasciatis, cristæ plumis medialiter albo late fasciatis; interscapulio et præpectore nigris, viridi adumbratis, et rufo lavatis vel marginatis; dorso postico fere brunnescenti-castaneo; cauda nigra, rectricibus medianis fere castaneo marmoratis, fasciis paucis flavicanti-albidis; tectricibus alarum remigibusque castaneis, nigro variegatis; pectore saturate castaneo, corpore reliquo subtus pallidiore magis cinnamomeo. Long. tota circa 35·0, alæ 14·5. (Descr. feminæ adultæ ex Savana Grande. Mus. nostr.)

Hab. Mexico [21], Sierra Madre above Ciudad Victoria, Tamaulipas, and Chimalapa (*Richardson* [15]), Misantla (*Ferrari-Perez* [15]), Vera Cruz (*Sallé* [2], *Ferrari-Perez* [14]), Tapana, Tehuantepec (*Sumichrast* [11]), North Yucatan [12 15], Cozumel I. [6 7 13 15] (*Gaumer*); Guatemala [19], Lake of Peten and Chilomo (*Leyland* [15]), Savana Grande [15], Raxché, Vera Paz [5] (*O. S.*); Honduras, Lake of Yojoa (*Taylor* [4]), San Pedro (*Whitely* [8]).

This Curassow is distinguished by the female having the crest black barred with white, the general colour of the secondaries chestnut, and either no bars on the tail-feathers or with the bars slightly indicated on the upperside only. The male is of a uniform black, with a swollen knob at the base of the upper mandible, and no wattles are present at the base of the lower mandible; the tail, too, is not tipped with white.

C. globicera is strictly a forest species, frequenting uninhabited districts and is generally met with in pairs, though the males sometimes roam about alone. In the morning and evening this bird is usually found perched upon the trees and feeding on fruit, but during the day spends its time chiefly on the ground scratching in the leaves in search of food and is very wary, constantly listening for, and immediately taking flight at, the approach of danger. In Guatemala, where perhaps the species is less persecuted than in parts of Mexico, we found it comparatively tame and when perched upon a tree would allow a sportsman to get within gunshot without betraying alarm. The call resembles the distant roaring of the "tiger," or, as Dr. Gaumer describes it, "the gentle blowing in the bunghole of a barrel." To the natives of both Mexico and Guatemala the Curassow is known by the name "Pahuil," and may often be seen about their villages in a domesticated state, the flesh being

highly esteemed. Dr. Gaumer states that the bones are said to be poisonous to cats and dogs.

2. **Crax panamensis.**

Crax globicera, Lath. (nec Linn.), Ind. Orn. ii. p. 624[1]; Lawr. Ann. Lyc. N. Y. viii. p. 12[2]; ix. p. 139[3]; v. Frantz. J. f. Orn. 1869, p. 373[4]; Scl. & Salv. P. Z. S. 1870, p. 513[5]; Scl. Tr. Z. S. ix. p. 274 (part.)[6]; x. p. 543, t. 89[7]; Boucard, P. Z. S. 1878, p. 42[8]; Nutting, Pr. U. S. Nat. Mus. v. p. 408[9]; vi. p. 408[10]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 524[11]; Underwood, Ibis, 1896, p. 448[12].

Crax rubra, Steph. (nec Linn.), in Shaw's Gen. Zool. xi. p. 168, t. 9[13]; Lawr. Ann. Lyc. N. Y. vii. p. 301[14].

Crax alberti, Fraser, P. Z. S. 1850, p. 246, tt. 27, 28 (part., ♀)[15].

Crax sp., Scl. & Salv. P. Z. S. 1864, p. 371[16].

Crax panamensis, Grant, Cat. Birds Brit. Mus. xxii. p. 479[17]; Handb. Game-Birds, ii. p. 205[18]; Festa, Boll. Mus. Torino, xiv. no. 361, p. 1[19].

C. globiceræ similis, sed rectricibus anguste albo marginatis distinguenda. Long. tota circa 35·0, alæ 14·6, caudæ 13·0, tarsi 4·2. (Descr. maris adulti ex Lion Hill, Panama. Mus. nostr.)

♀. *C. globiceræ* similis, sed rectricibus albo vel dilute fulvo, supra et infra distincte fasciatis. Long. tota 32·0, alæ 14·4. (Descr. feminæ adultæ ex Panama. Mus. nostr.)

Hab. NICARAGUA, Los Sábalos, E. of Lake of Nicaragua (*Nutting*[10]), Rio Escondido (*Richmond*[11]); COSTA RICA[5 7], San José (*Carmiol*[3], *v. Frantzius*[4]), Valza (*Carmiol*[17]), Sarapiqui (*v. Frantzius*[4]), San Carlos, Volcan de Irazu, Naranjo (*Boucard*[8]), La Palma, Gulf of Nicoya (*Nutting*[9]), Rio Frio (*Richmond*[11]), Miravalles (*Underwood*[12]); PANAMA[2 5 14], Lion Hill[16 17] (*M'Leannan*).

The Curassow inhabiting the country from Nicaragua to Panama has been separated by Mr. Ogilvie-Grant from *C. globicera* on somewhat slight grounds. He says that the males of both species are alike, except that in *C. panamensis* the tail-feathers are slightly margined with white, while those of the female are strongly barred, both above and below, with white or pale buff, the tail-feathers of the latter sex in some specimens of *C. globicera* being faintly barred on the upperside only. Von Frantzius states that he saw this species first in a wild state on the Sarapiqui River[4], but he afterwards frequently met with it domesticated, and that when captured young the bird is easily reared, the flesh being considered excellent. In Costa Rica, like its northern ally of Mexico and Guatemala, this bird is known to the Indians as "Pahuil," and doubtless the habits of the two species are similar. Mr. Champion noticed *C. panamensis* on the Pacific slope of the Volcan de Chiriqui, but specimens were not preserved.

3. **Crax chapmani.**

Crax chapmani, Nelson, Pr. Biol. Soc. Washington, xiv. p. 170[1].

Hab. MEXICO, S. & E. Yucatan, S. Campeche (*Nelson & Goldman*[1]).

Mr. Nelson has founded this species on a single female obtained at Puerto Morelos,

but we are unable to give a diagnosis, as he has omitted to state its precise characters. He says that it is found in the forests of Eastern Yucatan and Southern Campeche in common with *C. globicera*, the former being known to the Maya Indians as "Bolonchan" or "Bolonchana," whereas the latter is called "Cambul." It seems, however, extraordinary that two closely-allied species should inhabit the same area.

Subfam. *OREOPHASINÆ*.

Upper mandible broader than high, with an elevated naked cylindrical helmet; top of head nearly naked.

OREOPHASIS.

Oreophasis, Gray, Gen. Birds, iii. p. 485 (1844); Grant, Cat. Birds Brit. Mus. xxii. p. 489 (1893); Game-Birds, ii. p. 217 (1897).

The American Mountain-Pheasant is distinguished by having the width of the upper mandible *greater than* the height, and by the possession of an elongate, straight, rather slender, cylindrical casque or helmet situated on the top of the head between the eyes. The crown is mostly naked, but the base of the upper mandible, as far as the nostrils, is densely covered with velvety feathers. Tail-feathers 12. The first primary-quill is much the shortest, being about half the length of the fifth, which is equal to the tenth, the seventh slightly the longest. The sexes are similar in plumage.

Only one species is known.

1. **Oreophasis derbianus.**

Oreophasis derbianus, Gray, Gen. Birds, iii. p. 485, t. 121 [1]; Scl. & Salv. Ibis, 1859, p. 224 [2]; P. Z. S. 1870, p. 541 [3]; Salv. Ibis, 1860, pp. 43, 248 [4]; 1873, p. 429 [5]; 1874, p. 188 [6]; Grant, Cat. Birds Brit. Mus. xxii. p. 489 [7]; Handb. Game-Birds, ii. p. 218 [8].

Penelope fronticornis, Van der Hoev. Handb. der Zool. ii. p. 435 [9]; Engl. edit. p. 422 [10].

Niger, viridi adumbratus; loris, fronte et capitis lateribus velutino-nigris, gutture superiore fere nudo; præpectore et pectore albis, scapis plumarum nigris; abdomine, tibiis et hypochondriis brunnescenti-nigris; corporis lateribus fere fulvescentibus, plumis medialiter saturatioribus; cornu capitali miniaceo; pedibus saturate miniaceis: rostro pallide stramineo. Long. tota circa 36·0, alæ 15·5, caudæ 15·2, tarsi 3·6.

♀ mari similis. (Descr. maris et feminæ ex Volcan de Fuego. Mus. nostr.)

Hab. Guatemala [1], Volcan de Fuego [2 4], Chicaman [6] (*O. S. & F. D. G.*), Cerro Zunil (*Champion*).

This remarkable species, one of the most interesting to be met with in Central America, was for a long time supposed to be confined to the high forests of the Volcan de Fuego, whence doubtless Mr. Skinner's original specimen was obtained. In his expedition to Guatemala in 1857–8, Salvin, while staying at Dueñas, at the foot of the volcano, procured several examples through an Indian hunter, José Ordoñez,

and though he accompanied him on more than one occasion for the purpose of getting a sight of this rare bird, he was not successful in doing so. In November, 1861, on his second journey to Guatemala, in company with myself, while making an expedition to the top of the volcano in order to take an observation of its altitude, we had nearly passed through the belt of *Cheirostemon* forest when a large bird started from a bush close to our track. I fired at it with small shot, thinking it was a "Kyi" (*Penelopina nigra*), but failed to bring it down. Salvin, who saw the prominent white band across the tail, instantly recognized that it was an *Oreophasis*, and we started off in pursuit. The bird did not go far, but joined two others in a tree at a short distance. Salvin now got a shot, but the gun missed fire, though on a second attempt he wounded one, which flew only a few yards into another tree, where he secured it; we were unable to come up with the others, though we followed them for some distance, as they flew from tree to tree ahead of us. On skinning our specimen we found the crop, like that of most of those previously obtained by our hunter, contained a fruit like a small plum, which the bird appears to eat both ripe and unripe. Ordoñez informed us that the *Oreophasis* feeds in the early morning, but as the day advances descends to the ground, passing the time scratching and rolling amongst the dead leaves, but if disturbed it immediately takes to the trees.

Salvin subsequently procured several specimens from the high range above the village of Chicaman in Gueguetenango *, where it was fairly abundant; and while Champion was staying at the coffee-estate of "Las Nubes," on the Cerro Zunil, on the Pacific slope, one was shot in the forest there at an elevation of about 7000 feet, but the head only was sent home, the rest having been eaten.

It is probable that the bird never descends much below 7000 feet and chiefly frequents the *Cheirostemon* trees.

The *Oreophasis* is known to the Indians as "Khannanay" and to the Ladinos or half-breed Indians as "Faisan."

Subfam. *PENELOPINÆ*.

Upper mandible broader than high, without an elevated helmet; top of the head covered with feathers.

PENELOPE.

Penelope, Merrem, Beytr. Vögel, ii. p. 42 (1786); Av. Icones et Descr. ii. p. 39 (1786); Grant, Cat. Birds Brit. Mus. xxii. p. 490 (1893).

The Penelopes differ from the Curassows in having the width of the upper mandible greater than its height; the nostrils, which are situated rather far forward, a large space round the eye, and the chin and throat are all naked, the last having a

* Usually written "Huehuetenango."

median wattle; the inner web of the primaries is excised at the extremity and the plumage of the sexes is alike.

This genus is strictly neotropical, fifteen species being recognized; two of these are found within our limits, the remaining thirteen being South American.

1. Penelope purpurascens.

Penelope purpurascens, Wagl. Isis, 1830, p. 1110[1]; 1831, p. 517[2]; Scl. P. Z. S. 1859, pp. 369[3], 391[4]; Moore, P. Z. S. 1859, p. 61[5]; Scl. & Salv. Ibis, 1859, p. 223[6]; P. Z. S. 1870, pp. 522[7]; Salv. Ibis, 1861, p. 145[8]; Lawr. Mem. Bost. Soc. N. H. ii. p. 306[9]; Bull. U. S. Nat. Mus. no. 4, p. 45[10]; Sumichr. La Nat. ii. p. 37[11]; v. p. 229[12]; Boucard, P. Z. S. 1883, p. 459[13]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175[14]; Grant, Cat. Birds Brit. Mus. xxii. p. 496[15]; Handb. Game-Birds, p. 224[16].

Salpiza purpurascens, Wagl. Isis, 1832, p. 1226[17].

Brunnescenti-olivacea, æneo-viridi adumbrata; secundariis et supracaudalibus purpurascentibus; pileo et genis brunneis; dorso postico et uropygio brunneis, æneo tinctis; corpore subtus brunneo, colli, interscapulii et pectoris plumis lateraliter albo marginatis: rostro nigro; loris et regione oculari (cum gula summa) nudis, violaceo-nigris; gula ima coccinea; tarso coccineo; iride coccinea. Long. tota circa 34·5, alæ 15·0, caudæ 14·6, tarsi 3·4. (Descr. maris adulti ex Retalhuleu. Mus. nostr.)

♀ mari similis. Ala 14·0. (Descr. feminæ ex Volcan de Fuego. Mus. nostr.)

Hab. Mexico (*Wagler*[1 2]), Mazatlan (*Bischoff*[7 9], *Grayson*[9]), Sierra Madre above Ciudad Victoria, Tamaulipas (*Richardson*[15]), Vera Cruz (*Sumichrast*[11]), Jalapa (*Ferrari-Perez*[14], *De Oca*[3 7]), Santa Ana, Jalapa River (*Ferrari-Perez*[15]), Hacienda de los Atlixcos (*F. D. G.*[15]), Rio Grande[4], Oaxaca[7] (*Boucard*), Villa Alta (*Trujillo*[15]), Chimalapa (*Richardson*[15]), forests of both coasts[12], Santa Efigenia, Tehuantepec[10] (*Sumichrast*), Tonila, Chiapas (*Xantus*[7 9]), Northern Yucatan, forest of Yak-Jonat (*Gaumer*[13]); Guatemala[6 15], Retalhuleu (*Richardson*[15]), Pacific slope[7], Raxché, Vera Paz[8 15] (*O. S.*), Savana Grande, Volcan de Fuego, and Medio Monte (*O. S. & F. D. G.*[15]); Honduras (*Leyland*[5], *Dyson*[7]).

The Purple Penelope, though distributed over a wide area, is only met with in the large forests, where it is locally abundant, and, like its allies, is strictly arboreal in habits, feeding on fruit, or when this is scarce on leaves and buds. Sumichrast[12] says this species is known in the State of Vera Cruz as "Faisan griton" or "Cojolite"; the latter name is likewise used for it by the Spaniards in Northern Yucatan and Guatemala, while in the Maya language it is called "Kosh"[13]. Dr. Gaumer[13] found it abundant in the forest of Yak-Jonat. He says that on discovering a tree laden with its favourite fruit it utters a loud cry, and in a moment from all directions answers may be heard; soon the tree is covered with birds, who, having stripped the fruit, fly away to return no more; on two occasions he had the good fortune to be beneath a tree when the birds were thus feeding. The first time he counted eighty-four and on a second occasion fifty-one together, and of the latter he succeeded in bringing down eight. The flesh is very good and highly esteemed, but the bones, like those of *Crax globicera*, are said to be poisonous to dogs.

2. Penelope cristata.

Meleagris cristata, Linn. Syst. Nat. i. p. 269 [1].

Penelope cristata, Gmel. Syst. Nat. i. 2, p. 733 [2]; Salv. Ibis, 1869, p. 317 [3]; Scl. & Salv. P. Z. S. 1870, p. 525 [4]; Nutting, Pr. U. S. Nat. Mus. v. p. 409 [5]; vi. p. 408 [6]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 128 [7]; Richm. Pr. U. S. Nat. Mus. xvi. p. 523 [8]; Grant, Cat. Birds Brit. Mus. xxii. p. 498 [9]; Handb. Game-Birds, ii. p. 226 [10]; Underwood, Ibis, 1896, p. 448 [11]; Bangs, Auk, xviii. p. 35 [12].

Penelope purpurascens, Lawr. (nec Wagl.), Ann. Lyc. N. Y. viii. p. 12 [13]; ix. p. 139 [14]; v. Frantz. J. f. Orn. 1869, p. 372 [15]; Boucard, P. Z. S. 1878, p. 42 [16].

Supra olivacea, æneo-viridi adumbrata; pileo et cristæ plumis saturate brunneis concoloribus; interscapulii plumis vix albo marginatis; dorso postico et uropygio sordide castaneis, vix viridi adumbratis; pectore sordide olivaceo, plumis singulis lateraliter albo marginatis; abdomine castaneo. Long. tota circa 34·0, alæ 14·5, caudæ 14·0, tarsi 3·3. (Descr. maris adulti ex Panama. Mus. nostr.)

♀ mari similis, sed minor; ala 13·0. (Descr. feminæ adultæ ex San Emilio, Nicaragua. Mus. nostr.)

Hab. Nicaragua, Los Sábalos, Rio San Juan del Norte (*Nutting* [6]), Rio Escondido (*Richmond* [8]), San Carlos (*Boucard* [16]); Costa Rica (*v. Frantzius* [15]), Valza [3 4], Barranca [14], Angostura [14] (*Carmiol*), La Palma (*Nutting* [5], *Zeledon* [9 12]), Jiménez, Naranjo de Cartago (*Zeledon* [7]), Volcan de Irazu (*Boucard* [14]), Miravalles (*Underwood* [11]); Panama [9 11], Divala (*Brown* [12]), Lion Hill Station (*M'Leannan* [9]).—Colombia [9]; Ecuador [9].

This species is easily recognized by its uniform dark brown head and crest and by the chestnut abdomen. In Central America *P. cristata* ranges from Nicaragua to Panama, and extends as far south as Ecuador.

Von Frantzius says that in Costa Rica it is known as the "Pava," and is often kept in a domestic state. It prefers the thickest parts of the forest, perching in large numbers on the trees. The Crested Guan is an easy bird to shoot, and, like its allies, is much sought after on account of its delicate flesh.

Mr. Richmond found the species common on the Escondido River in Nicaragua, frequenting the loftiest trees. He says that it is much sought after by the natives, who call it "Qualm." The hunter is guided to the spot frequented by the birds by the low prolonged cry they utter when feeding, and without this clue it would be impossible to discover their whereabouts.

PENELOPINA.

Penelopina, Reichenb. Tauben, p. 152 (1862); Grant, Cat. Birds Brit. Mus. xxii. p. 502 (1893).

In this genus the plumage of the sexes is different in colour, and the male alone has the bare throat ornamented with a large wattle.

Penelopina is confined to Central America, and only a single species is known.

1. Penelopina nigra.

Penelope niger, Fraser, P. Z. S. 1850, p. 246, t. 29 [1]; Salv. Ibis, 1860, p. 194 [2].

Penelope nigra, Scl. & Salv. Ibis, 1859, p. 224 [3]; Salv. P. Z. S. 1867, p. 160 [4].

Penelopina nigra, Scl. & Salv. P. Z. S. 1870, p. 528[5]; Salv. Cat. Strickl. Coll. p. 560[6]; Salv. & Godm. Ibis, 1892, p. 328[7]; Grant, Cat. Birds Brit. Mus. xxii. p. 503[8]; Game-Birds, ii. p. 233[9].

Nigra, saturate viridi vel cyanescenti-viridi adumbrata, gastræo brunnescentiore; regione periophthalmica nuda, purpurea; gutture et præpectore nudis, cum caruncula magna, rubris: rostro et pedibus rubris; iride rufescenti-brunnea. Long. tota circa 24·0, alæ 9·3, caudæ 11·0, tarsi 2·9. (Descr. maris adulti ex Santa Rita, Chiapas. Mus. nostr.)

♀ supra nigra, rufo fasciata; pilei et colli postici plumis nigris, brunneo marginatis; præpectore arenaceo-brunneo, nigro indistincte marmorato; pectoris et corporis lateralium plumis rufescenti-fulvo et saturato-fulvo marginatis; abdomine brunnescenti-griseo, fusco marmorato. Ala 9·3. (Descr. feminæ adultæ ex Volcan de Agua. Mus. nostr.)

Hab. MEXICO, Santa Rita, Chiapas (*Richardson*); GUATEMALA (*Skinner*[3], *Constancia*[6]), Coban, Vera Paz (*O. S.*[2 8]), Volcan de Agua, Volcan de Fuego (*O. S. & F. D. G.*[4 5 8]), El Rincon, San Marcos (*Richardson*[8]); NICARAGUA, Matagalpa (*Richardson*[7]).

P. nigra was supposed to be confined to the forests of Guatemala, but Mr. Richardson recently procured an example in Chiapas, as well as a female at Matagalpa. A further series of specimens is perhaps necessary before we can positively decide that the birds from Nicaragua and Guatemala are identical.

We have but few notes on the habits of the Black Penelope, but when shooting in one of the ravines of the Volcan de Agua we observed that the male bird had a curious habit of "drumming." As it flew in a downward direction, it emitted a sort of crashing or rushing noise, like that produced by a falling tree.

CHAMÆPETES.

Chamæpetes, Wagler, Isis, 1832, p. 1227; Grant, Cat. Birds Brit. Mus. xxii. p. 521 (1893).

The Sickle-winged Guans differ chiefly from the Penelopes in having the fore part of the neck as well as the chin and throat entirely feathered, and there is no wattle. The two outer primary-quills are deeply excised at the extremity, the third less so.

Two species are known, one of which occurs within our limits, while the second, *C. goudoti*, inhabits Tropical South America.

1. Chamæpetes unicolor. (Tab. LXXI.)

Chamæpetes unicolor, Salv. P. Z. S. 1867, p. 159[1]; 1870, p. 217[2]; Lawr. Ann. Lyc. N. Y. ix. p. 139[3]; v. Frantz. J. f. Orn. 1869, p. 372[4]; Scl. & Salv. P. Z. S. 1870, p. 531[5]; Boucard, P. Z. S. 1878, p. 42[6]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 128[7]; Grant, Cat. Birds Brit. Mus. xxii. p. 522[8]; Game-Birds, ii. p. 257[9].

Niger, viridi adumbratus: subtus niger, abdomine tamen brunnescentiore, vix rufescenti-fulvo marmorato: rostro nigro; pedibus rubris. Long. tota circa 24·0, alæ 11·4, caudæ 10·5, tarsi 2·7. (Descr. exempl. typ. ex Veragua. Mus. nostr.)

Hab. COSTA RICA (*Carmiol*[5]), Volcan de Irazu (*Boucard*[6], *Rogers*[8]), San José[8], La

Palma [3 4] (*v. Frantzius*), Rancho Redondo (*v. Frantzius* [4], *Zeledon* [3 7]); PANAMA, Veragua [1], Calovevora [2 8], Cordillera de Tolé [8] (*Arcé*).

The Black-breasted Sickle-winged Guan, locally known as the "Gallina volcanica," is very common on the slopes of the Volcan de Irazu. According to Dr. A. von Frantzius, the bird is most frequently shot towards the end of the rainy season, when it leaves the thick forests on the hill-sides and visits the lower-lying and less densely wooded parts. Nothing else concerning its habits appears to have been recorded.

ORTALIS.

Ortalis, Merrem, Av. Icones et Descr. ii. p. 40 (1786); Wharton, Ibis, 1879, p. 450; Grant, Cat. Birds Brit. Mus. xxii. p. 504.

Ortalida, Wagl. et auctt.

The sexes in *Ortalis* are alike in plumage, and the species are further distinguished from those of the foregoing genera by having a narrow band of feathers down the middle of the throat, which is otherwise bare; no wattle is present.

Eighteen species are recognized, of which one only extends its range into the southern United States; five are found in Central and the remainder in South America.

1. **Ortalis wagleri.** (Tab. LXXII.)

Ortalida wagleri, G. R. Gray, List Gallinæ Brit. Mus. p. 12 [1]; Scl. & Salv. P. Z. S. 1870, p. 534 [2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 306 [3].

Ortalis wagleri, Grant, Cat. Birds Brit. Mus. xxii. p. 507 [4]; Handb. Game-Birds, ii. p. 237, t. 39 [5].

Supra grisescenti-olivacea; pileo brunnescenti-nigro, nucham versus graduatim saturate cinereo; capitis lateribus, supercilio et gula mediana pallide cinereis; præpectore grisescenti-olivaceo; pectore et corpore reliquo subtus castaneis; rectricibus quatuor externis saturate cærulescenti-viridibus, saturato-castaneo late terminatis: rostro fusco, area periophthalmica rubra, cyaneo variegata; gutture laterali nudo, rubro; pedibus griseis. Long. tota circa 25·0, alæ 9·5, caudæ 10·5, tarsi 3·0. (Descr. maris adulti ex Presidio de Mazatlan. Mus. nostr.)

♀ mari similis. Ala 9·5. (Descr. feminæ adultæ ex Sinaloa. Mus. nostr.)

Hab. WESTERN MEXICO [1], Mazatlan (*Grayson* [2 3]), Presidio de Mazatlan (*Forrer* [4]), San Blas and Santiago de Tepic, Jalisco (*Richardson* [4]).

This species can be easily recognized from all the other members of the genus *Ortalis* by its chestnut abdomen. It is a native of Western Mexico, occurring from Mazatlan to Jalisco.

Nothing has been recorded of its habits.

2. **Ortalis poliocephala.**

Penelope poliocephala, Wagl. Isis, 1830, p. 1112 [1].

Ortalida poliocephala, Wagl. Isis, 1832, p. 1227 [2]; Scl. & Salv. P. Z. S. 1869, p. 364 [3]; 1870, p. 537 [4]; Lawr. Mem. Bost. Soc. N. H. ii. p. 306 [5]; Bull. U. S. Nat. Mus. no. 4, p. 45 [6]; Sumichr. La Nat. v. p. 229 [7].

Ortalis poliocephala, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 175 [8]; Grant, Cat. Birds Brit. Mus. xxii. p. 511 [9]; Handb. Game-Birds, ii. p. 244 [10].

Ortalida leucogastra, Scl. (nec Gould), P. Z. S. 1859, p. 391 [11].

Supra grisescenti-olivacea; pileo et collo undique saturate cinereis; præpectore grisescenti-olivaceo; pectore et abdomine albis; subcaudalibus pallide ferrugineis; rectricibus fulvo terminatis: rostro plumbeo; pedibus cineraceis; iride coryllina, orbite et gula nudis coccineis. Long. tota circa 25·0, alæ 9·6, caudæ 10·8, tarsi 2·9.

♀ *ad.* mari similis. (Descr. maris et feminæ ex Tehuantepec. Mus. nostr.)

Hab. Mexico [1 2] (*le Strange* [3]), Real Arriba (*Deppe* [4]), Rio Armeria and Rio Tupila (*Xantus* [4 5]), Chachapa, Puebla (*Ferrari-Perez* [8]), Rio Grande, Oaxaca (*Boucard* [11]), Tapana, near Santa Efigenia, Barrio, Tehuantepec city, Torullo, Tapanatepec, Tonala (*Sumichrast* [6 7]), Salina Cruz (*Richardson* [9]).

O. poliocephala belongs to the section of the genus including the species with white or buff tips to the tail-feathers, and is further distinguished by the rufous-buff under tail-coverts. Although nearly allied to *O. vetula,* it is easily recognized from that species by its larger size and dark grey head and neck.

The present species is said by Sumichrast [7] to be very common in the Pacific coast provinces of Mexico, where it is known as the "Chachalaca." Nothing has been published respecting its habits.

3. Ortalis vetula.

Penelope vetula, Wagl. Isis, 1830, p. 1112 [1].

Ortalida vetula, Wagl. Isis, 1832, p. 1227 [2]; Moore, P. Z. S. 1859, p. 62 [3]; Scl. P. Z. S. 1859, pp. 369 [4], 391 [5]; Scl. & Salv. Ibis, 1859, p. 224 [6]; P. Z. S. 1869, p. 364 [7]; 1870, pp. 538 [8], 838 [9]; Lawr. Ann. Lyc. N. Y. v. p. 116 [10]; Bull. U. S. Nat. Mus. no. 4, p. 45 [11]; Taylor, Ibis, 1860, p. 311 [12]; Sumichr. La Nat. ii. p. 37 [13]; v. p. 229 [14].

Ortalis vetula, Boucard, P. Z. S. 1883, p. 460 [15]; Salv. Ibis, 1889, p. 378 [16]; 1890, p. 89 [17]; Grant, Cat. Birds Brit. Mus. xxii. p. 512 [18]; Handb. Game-Birds, ii. p. 245 [19].

Penelope garrula, Licht. (nec Humb.), Preis-Verz. Mex. Vög. p. 3 [20]; Cab. J. f. Orn. 1863, p. 58 [21].

Ortalida poliocephala, Scl. (nec Wagl.), P. Z. S. 1856, p. 310 [22]; Cassin, Illustr. p. 267, t. 44 [23].

Ortalida maccalli, Baird, B. N. Amer. p. 611 [24]; Dugès, La Nat. i. p. 141 [25]; Lawr. Ann. Lyc. N. Y. ix. p. 209 [26].

Ortalis vetula maccalli, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 176 [27]; Herrera, La Nat. (2) i. p. 278 [28]; Bendire, Life Hist. N. Amer. Birds, p. 119, t. 3. fig. 16 [29]; Drury, Journ. Cincinnati Soc. xviii. p. 201 [30].

Ortalida plumbiceps, Gray, List Gallinæ Brit. Mus. p. 11 [31].

Ortalida ruficrissa, Scl. & Salv. P. Z. S. 1870, p. 538 [32].

Ortalis vetula pallidiventris, Ridgw. Man. N. Amer. Birds, p. 209 [33]; Chapm. Bull. Amer. Mus. viii. p. 288 [34].

O. poliocephalæ similis, sed minor, pileo colloque minus cinerascentibus; gula nuda et iride coccineis. Long. tota circa 20·0, alæ 8·0, caudæ 9·6, tarsi 2·5.

♀ mari similis. (Descr. maris et feminæ ex Vera Cruz. Mus. nostr.)

Hab. North America, Southern Texas [18].—Mexico (*Wagler* [1 2]; *Deppe & Schiede* [20 21]), Matamoros (*McCall* [23]), Sierra Madre above Ciudad Victoria, Aldama, Valles, San Luis Potosi, Vera Cruz (*Richardson* [18]), Tampico (*le Strange* [7], *Richardson* [18]), San José Acateno [27], Plan del Rio [18] (*Ferrari-Perez*), Guanajuato, Guadalajara (*Dugès* [25]), Hacienda de los Atlixcos (*F. D.G.* [18]), Jalapa (*de Oca* [4], *Höge* [18]), Cuestade Misantla, Vega del Casadero, La Antigua (*M. Trujillo* [18]), Playa Vicente (*Boucard* [5]), Cordova, Vera Cruz (*Sallé* [8 22], *Sumichrast* [13 14]), Orizaba [14], Uvero [14], Chimalapa [14], Guichicovi, Tehuantepec [11] (*Sumichrast*), Teapa, Tabasco (*H. H. Smith* [18]), Yucatan [15 33], Meco I. [16 17 18], Holbox I. [16 17 18], Cozumel I. [18], Mugeres I. [18] (*Gaumer*), Merida (*Schott* [26]); British Honduras (*Leyland* [18]), Belize (*Blancaneaux* [18]); Guatemala (*Skinner* [6]), Coban (*O. S.* [18]); Honduras (*Taylor* [12]), Omoa (*Leyland* [3]), San Pedro (*Whitely* [9]).

The races, or so-called subspecies, of *O. vetula* do not differ sufficiently to warrant their specific separation. Yucatan specimens are rather paler than those from most other localities, and some slight differences in the colour of the plumage and in size may occasionally be observed in a large series throughout its range.

The species is found in Texas, on the Lower Rio Grande, and southward through Mexico to Honduras, where it is strictly a forest bird and is very common. Dr. Gaumer [15] says that *O. vetula* spends most of its time in the trees feeding on fruit, flowers, and tender leaves, and that its neutral green plumage renders it almost invisible. When disturbed it jumps to the ground and, having ascertained the nature of the danger, gives one or two long leaps and again mounts upon a limb, thence hopping rapidly from branch to branch until out of sight. The cry is harsh and sonorous and may be constantly heard in the early morning or late evening. The native name "Chacha" or "Chachalaca," which seems to be applied also to other species of the genus, is derived from this note, which is frequently audible at a long distance. Dr. Gaumer says that the trachea of the male is a great trumpet-like instrument. It is described by him as prolonged beneath the skin of the breast and abdomen almost to the anus, whence it returns and enters the chest at the usual place; this peculiarity is not found in the female. In Texas the birds are said to nest in the heaps of leaves accumulated under the mesquite-bushes. The eggs are from three to five in number, of a creamy-white colour.

4. Ortalis leucogastra.

Penelope leucogastra, Gould, P. Z. S. 1843, p. 105 [1].

Ortalida leucogastra, Scl. & Salv. Ibis, 1859, p. 224 [2]; P. Z. S. 1870, p. 539 [3].

Ortalis leucogastra, Grant, Cat. Birds Brit. Mus. xxii. p. 514 [4]; Handb. Game-Birds, ii. p. 247 [5].

Penelope albiventer, Lesson (nec Wagl.), Rev. Zool. 1842, p. 174 [6]; Gould, Voy. Sulph., Zool. p. 48, t. 31 [7].

O. poliocephalæ similis, sed subcaudalibus et rectricum extimarum apicibus pure albis distinguenda. Long. tot. circa 20·0, alæ 8·3, caudæ 8·5, tarsi 2·3. (Descr. maris adulti ex Costa Grande, Guatemala. Mus. nostr.)

♀ mari similis.

Hab. Guatemala [4], Pacific slope [2], Retalhuleu, Costa Grande [4] (*O. S.*); Salvador, La Libertad (*Richardson* [4]); Nicaragua, Momotombo (*Richardson* [4]), Realejos (*Lesson* [6]).

The White-bellied Guan is very abundant in the Pacific coast region, and in the early morning the woods in the neighbourhood of the more remote villages resound with its loud continued cries. It is usually to be seen perched on the trees, and on being approached exhibits scarcely any symptoms of alarm. The breeding-season appears to extend over a considerable period, as young birds and fresh eggs were observed simultaneously in the month of March. The chicks appear to run almost as soon as they are hatched, and display great agility in avoiding capture by clinging to the branches of the underwood [2]. The nest, composed entirely of twigs, is usually placed in a low bush, and contains two creamy-white eggs with rough shells, measuring 1·5 by 1·25 inch.

5. Ortalis cinereiceps.

Ortalida cinereiceps, Gray, List Gallinæ Brit. Mus. p. 12 [1]; Salv. Ibis, 1869, p. 318 [2]; P. Z. S. 1870, p. 217 [3]; Scl. & Salv. P. Z. S. 1870, p. 540 [4]; Nutting, Pr. U. S. Nat. Mus. vi. p. 408 [5].

Ortalis cinereiceps, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 128 [6]; Richm. Proc. U. S. Nat. Mus. xvi. p. 523 [7]; Grant, Cat. Birds Brit. Mus. xxii. p. 515 [8]; Handb. Game-Birds, ii. p. 249 [9]; Underwood, Ibis, 1896, p. 448 [10]; Bangs, Auk, 1901, p. 35 [6 11].

Ortalida poliocephala, Lawr. (nec Wagl.), Ann. Lyc. N. Y. vii. p. 333 [12]; ix. p. 139 [13]; Scl. & Salv. P. Z. S. 1864, p. 371 [14]; Salv. P. Z. S. 1867, p. 161 [15]; v. Frantz. J. f. Orn. 1869, p. 372 [16].

Ortalida frantzii, Cab. J. f. Orn. 1869, p. 211 [17].

Supra saturate brunnescenti-olivacea; pileo nuchaque saturate cinereis; primariis castaneis; rectricibus externis brunnescenti-albo terminatis; præpectore pallidiore brunnescenti-olivaceo, abdomine graduatim brunnescenti-albo. Long. tot. circa 22·0, alæ 8·5, caudæ 8·7, tarsi 2·8. (Descr. maris adulti ex Costa Rica. Mus. nostr.)

♀ mari similis. (Descr. feminæ ex Veragua. Mus. nostr.)

Hab. Nicaragua, Los Sábalos, east of Lake of Nicaragua (*Nutting* [5]), Rio Escondido (*Richmond* [7]); Costa Rica (*Carmiol* [4 8], *v. Frantzius* [4 16 17]), Turrialba (*Carmiol* [13]), San José (*v. Frantzius* [8 13]), La Palma [13], Jiménez, Cartago [6] (*Zeledon*), Irazu, Miravalles (*Underwood* [10]); Panama (*Kellett & Wood* [1]; *M'Leannan* [4 8 12 14]), Divala, Chiriqui (*Brown* [11]), Paraiso Station (*Hughes* [8]), Santiago de Veragua [2 8 15], Cordillera de Tolé [8 15], Castillo (*Arcé* [3 8]).

O. cinereiceps is distinguished by its chestnut wings and dark grey head and nape. It is universally distributed over the whole of the high land of Costa Rica, and generally met with in small flocks, which frequent more particularly the borders of banana-

plantations and open places in the forest. They do not appear to be very shy birds, for Mr. Richmond [7] says that he fired more than a dozen times into a tree where a flock was feeding without causing them to take flight. Their loud harsh cry, heard most frequently about dusk, is much like that of *O. vetula*, and the name "Chachalaca" is applied to both species.

6. **Ortalis struthopus.**

Ortalis struthopus, Bangs, Pr. N. Engl. Zool. Club, ii. p. 61 [1].

Ortalis cinereiceps (nec Gray), Bangs, Auk, 1901, p. 25 [2]; Grant, Ibis, 1902, p. 245 [3].

O. cinereicipiti similis, sed, ut videtur, minor: subtus pallidior; torque collari olivaceo angustiore, rostro tenuiore, tarso digitisque brevioribus distinguenda. (Descr. ex scriptis Outram Bangs, *l. c.*)

Hab. PANAMA, San Miguel I. and Pedro Gonzales I., both in the Pearl Is. (*Brown* [13]).

The *Ortalis* of the Pearl Islands has been separated by Mr. Outram Bangs from the mainland species, *O. cinereiceps*, not only because of slight differences in plumage, but principally on account of the exceedingly small foot and tarsus.

We have no specimens of *O. struthopus* before us, and are therefore unable to determine the status of the species, but it is possibly one of those slightly different insular forms which often occur.

Suborder ALECTOROPODES.

The Turkeys, Partridges, and Quails, which are included in this group, are distinguished by having the hallux or hind toe raised above the level of the fore toes, with its basal phalanx much shorter than that of the third toe. The inner notch of the sternum extends more than half the length of the entire breast-bone.

The White-tailed Ptarmigan, *Lagopus leucurus*, has been recorded by Sumichrast ['La Naturaleza,' v. p. 231 (1881)] from Mexico, on the authority of an example seen by him in 1854 in the National Museum of Mexico, and said to have been obtained on Popocatepetl. Señor F. Ferrari-Perez informs us, however, that there is no such specimen in the Museum at the present time, nor can he trace it in any of their Catalogues. We therefore hesitate to include the species in our enumeration of the Central-American fauna; it inhabits the alpine summits of the mountains of North America, ranging from Liard River to New Mexico.

Fam. **MELEAGRIDÆ.**

The Turkeys are exclusively a New World family, confined to Northern and Central America. They are included by Mr. Ogilvie Grant and some other recent authors in the Phasianidæ, but it seems to us more natural to treat them as a separate section of

the Game-Birds. Their large size, the peculiar form and texture of their body-feathers, which are truncate, and their carunculated heads and necks, separate the Turkeys from the rest of the true Game-Birds, and we have distinguished them accordingly.

MELEAGRIS.

Meleagris, Linn. Syst. Nat. i. p. 268 (1766) ; Grant, Cat. Birds Brit. Mus. xxii. p. 386 (1893).
Agriocharis, Chapman, Bull. Amer. Mus. viii. p. 298 (1896); Sharpe, Hand-list Birds, i. p. 43 (1899).

The characters for the genus are the same as those for the family.

We recognize three species of *Meleagris*: of these, *M. americana* inhabits Southern Canada and the eastern States of North America*; *M. gallopavo* occurs in Mexico and extends northwards into Texas and Arizona; and the beautiful *M. ocellata* is found in Yucatan, British Honduras, and Northern Guatemala.

1. Meleagris gallopavo.

Meleagris gallopavo, Linn. Syst. Nat. i. p. 268 [1]; Grant, Cat. Birds Brit. Mus. xxii. p. 387 [2]; Handb. Game-Birds, ii. p. 103 [3]; Ibis, 1902, p. 235 [4]; Coues, Auk, xiv. p. 272 [5]; Nelson, Auk, xvii. p. 123 [6].

Meleagris mexicana, Gould, P. Z. S. 1856, p. 61 [7]; Am. Journ. Sci. xxii. p. 139 [8]; Edinb. New Phil. Journ. n. s. iv. p. 371 [9]; Ann. & Mag. Nat. Hist. (2) xix. p. 107 [10]; Elliot, Birds N. Am. ii. t. 38 [11]; Monogr. Phas. t. 32 [12]; Nelson, Auk, xvii. pp. 122, 123 [13].

Meleagris gallopavo mexicana, Bendire, Life Hist. N. Amer. Birds, p. 116, t. 3. fig. 15 [14]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 118 [15].

Meleagris gallopavo, var. *intermedia*, Sennett, Bull. U. S. Geol. & Geogr. Surv. v. p. 428 [16].

Meleagris gallopavo intermedia, Grant, Ibis, 1902, p. 235 [17].

Meleagris gallopavo ellioti, Sennett, Auk, ix. p. 167, t. 3 [18]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 118 [19].

Meleagris ellioti, Grant, Cat. Birds Brit. Mus. xxii. p. 388 [20]; Handb. Game-Birds, ii. p. 105 [21].

Meleagris gallopavo merriami, Nelson, Auk, xvii. p. 120 [22]; Goldman, Auk, xix. pp. 121–127 [23]; Allen, Auk, xix. p. 311 [24]; Nelson, Auk, xix. p. 388 [25].

Nigricans, æneo, cuprescenti-viridi, vel purpurascenti-æneo micans; pectore medio plumis nigris criniformibus ornato; supracaudalibus rectricibusque late albo terminatis, his externis tamen fascia subterminali nigra medialiter metallica instructis; capitis collique parte nuda pallide coccinea. Long. tota circa 43·0, alæ 21·0, caudæ 15·5, tarsi 7·0. (Descr. exempl. typ. *M. mexicanæ*, Gould. Mus. Brit.)

♀ mari similis, sed minor, gastræi plumis albo limbatis, plumis pectoris criniformibus distinguenda. Long. tota circa 40·0, alæ 17·9, caudæ 14·3, tarsi 5·3. (Descr. feminæ adulti ex Ciudad in Durango. Mus. nostr.)

Hab. North America, South-western United States, from Western Texas to Arizona [2 15], lowlands of Southern Texas [19 20], New Mexico [22], Rio Grande [18], and Arizona [6 22 23]. —Mexico, El Salto in Durango (*Nelson* [13]), Ciudad in Durango (*Forrer* [2]), Real del Monte Mines [7], Bolaños in Jalisco [13] (*Floresi*), Tamaulipas (*Richardson* [20]).

* Birds from Florida have been separated as a subspecies under the name of *M. gallopavo osceola*; they have the white bars on the primaries narrower and pale chestnut tips to the tail-feathers.

M. gallopavo, from which the original stock of our domestic bird was probably derived, is found in Arizona and Texas, as well as in the Mexican Republic. In Tamaulipas, and also in Southern Texas, some variation in the colour of the plumage takes place, certain specimens have the upper and under tail-coverts and the tail-feathers tipped with buff, instead of pure white, but in this respect there is much variation, even in examples from the same locality. The Eastern form has been separated by Mr. Sennett under the name of *M. gallopavo*, var. *intermedia*, and Mr. Ogilvie Grant has included it in the 'Catalogue of Birds in the British Museum' as *M. ellioti*; but the differences are so slight and apparently unstable that they do not appear to us to be of sufficient importance to necessitate a specific distinction.

Mr. Nelson, too, has described a subspecies from the mountains of Arizona, Western New Mexico, and south to the Mexican border under the name of *M. gallopavo merriami*; but as this form has not yet been found south of the Mexican frontier we need not discuss it here.

Major Bendire [14] says that in Arizona this Turkey is a resident of the higher mountain-ranges, reaching an altitude of from 8000 to 10,000 feet, and retiring to the more sheltered cañons and timbered river-valleys at the approach of winter, where it congregates in large flocks, feeding chiefly on a small bitter acorn that grows in the cañons and parks of Southern Arizona. The bird usually selects a sycamore tree in a sheltered valley as its roosting-place, and sometimes as many as fifty or sixty may be seen in company. The mating-season lasts from about the beginning of March till the middle of April, when they commence nesting. Like other species of *Meleagris*, this Turkey is polygamous and the female alone attends to the duties of incubation, which lasts about four weeks; the males are said frequently to destroy both eggs and young birds. The nest is a hollow in the ground coarsely lined with grass and leaves, and is generally placed in the open country concealed by a small bush. Ten or eleven creamy-white eggs, spotted all over with reddish-brown, are laid.

2. **Meleagris ocellata.**

Meleagris ocellata, Cuv. Mém. Mus. d'Hist. Nat. vi. p. 1, t. 1 [1] (1820); Cabot, Proc. Bost. Soc. N. H. i. p. 73 [2]; Journ. Bost. Soc. N. H. iv. p. 246 (part.) [3]; Scl. & Salv. Ibis, 1859, p. 225 [4]; Moore, P. Z. S. 1859, p. 62 [5]; Taylor, Ibis, 1860, p. 311 [6]; Scl. P. Z. S. 1861, p. 402, t. 40 [7]; P. Z. S. 1863, p. 125 [8]; Elliot, Monogr. Phas. i. t. 33 [9]; Boucard, P. Z. S. 1883, p. 461 [10]; Grant, Cat. Birds Brit. Mus. xxii. p. 391 [11]; Handb. Game-Birds, ii. p. 110, t. 31 [12].

Meleagris aureus, Vieill. Tabl. Encycl. Méth. i. p. 361 [13].

Agriocharis ocellata, Chapm. Bull. Amer. Mus. viii. p. 298 [14]; Sharpe, Hand-list Birds, i. p. 43 [15].

Vivide metallica, plumis singulis æneo-viridibus, apicem versus purpurascenti-nigris, subterminaliter nigris et viridescenti-cupreis fimbriatis; supracaudalibus viridescenti-cyaneis, purpurascente micante terminatis; rectricum ocellis quoque viridi-cyanescentibus, plus minusve purpurascentibus; rectricibus rubescenti-cupreis, viridescente micante late marginatis; præpectore et hypochondriis interscapulio concoloribus;

gastræi plumis reliquis nigris, cuprescenti-rubro marginatis; capite et collo nudis cæruleis, et papillis magnis rubris ornatis; regione oculari scarlatina; caruncula frontali nuda cærulea. Long. tota circa 33·0, alæ 14·2, caudæ 13·1, tarsi 4·4.

♀ mari similis, sed vix ita vivide colorata, rectricum ocellis metallicis minoribus. Long. tota circa 33·0, alæ 14·2, caudæ 13·1, tarsi 4·4. (Descr. maris et feminæ ex Peten. Mus. nostr.)

Hab. Mexico, Buctzotz, Merida, Espita, and Valladolid, Yucatan (*Gaumer* [10 11]); British Honduras (*Mus. Paris* [1]), Western district (*Blancaneaux* [11]), Belize (*Leyland* [5], *Taylor* [6]); Guatemala, Yashá, Peten (*O. S.*[11]).

This beautiful Turkey, known to the Spaniards as "Pavo real del monte," is an inhabitant of the hot forests of Yucatan, its range extending into British Honduras, where the species is well known to the mahogany-cutters, and it reaches also to the neighbourhood of Peten in Guatemala. In Northern Yucatan, where the bird has been much persecuted on account of the excellence of its flesh, it is now by no means common and is very wary, at all events in the more frequented districts. Dr. Gaumer, who has resided for many years in Yucatan and has made a special study of the habits of *M. ocellata*, says that there is a district about ten leagues to the north and east of Valladolid, which was depopulated by the migration of the Indians some fifty years ago, where he found this Turkey fairly abundant. Salvin, during his short stay at Peten in 1862, obtained but a single specimen, killed by one of his hunters, and an excellent account of this expedition is given in Elliot's work [9]. Mr. Maudslay, who visited Peten some years later to investigate the ruins on the island of Flores in the lake, had several brought him by the Indians; and he also tells me that when at Cayo, on the Belize River, he saw several hybrids between this and the domestic bird reared by M. Blancaneaux. It was from Peten, too, that Robert Owen brought the living specimens which he afterwards presented to the Zoological Society's Gardens in the Regent's Park in 1861 [7] *. Dr. Gaumer says [10] that during the breeding-season, which is in May and June, the male makes a peculiar drumming noise, very deep and sonorous, after which it utters a cry resembling the rapid pecking of a distant Woodpecker or the croaking of a bull-frog. In Merida skins are sold at from one to two dollars each and living birds at from eight to ten. The eggs are similar to those of our domestic bird, but are somewhat smaller.

Fam. PHASIANIDÆ.

In this family are classed all the true Pheasants and Partridges of the Old World and the so-called Partridges of America. The latter, however, constitute a separate subfamily. The nostrils in the Phasianidæ are always exposed, the tarsi and toes are bare, thus differing from the Grouse, which have the legs feathered, and there is generally a well-developed spur on the tarsus of the male.

* See P. Z. S. 1861, p. 403, t. 40.

Members of this family are found in all the temperate and tropical portions of the globe, but no true Pheasants or true Partridges occur in America, which possesses only species with a serrated bill.

Subfam. *ODONTOPHORINÆ.*

The American Partridges, consisting of the Colins and their allies, are peculiar for their toothed or serrated bill, a feature found in the lower mandible of all the species of the New World.

DENDRORTYX.

Dendrortyx, Gould, Monogr. Odontoph. t. 20 (1844), Introd. p. 20 (1850); Grant, Cat. Birds Brit. Mus. xxii. p. 392 (1893).

The long-tailed American Partridges form a well-marked genus, including four species peculiar to Mexico or Central America. They are rather large birds, about the size of the Common Grey Partridge, and may be easily recognized from the other Odontophorinæ by their long wedge-shaped tail composed of twelve feathers, which is nearly as long as the wing. The sexes are similar in plumage, the bill very stout and short; there is a short crest and a naked space round the eye; the first flight-feather is much shorter than the tenth, and the tarsus is shorter than the middle toe and claw.

1. Dendrortyx macrurus.

Ortyx macroura, Jardine & Selby, Ill. Orn. i. text to t. 38 and t. 49 [1].

Dendrortyx macrourus, Gould, Monogr. Odontoph. t. 20 [2]; Grant, Cat. Birds Brit. Mus. xxii. p. 392 [3]; Handb. Game-Birds, ii. p. 112 [4]; Ibis, 1902, p. 237 [5].

Dendrortyx macrurus, Scl. P. Z. S. 1864, p. 178 [6]; Sumichr. La Nat. v. p. 229 [7]; Salv. Cat. Strickl. Coll. p. 572 [8].

Dendrortyx oaxacæ, Nelson, Auk, xiv. pp. 43, 44 [9].

Dendrortyx macrourus griseipectus, Nelson, l. c. p. 44 [10].

Dendrortyx macrourus striatus, Nelson, l. c. pp. 44, 45 [11].

Dendrortyx macrourus dilutus, Nelson, Auk, xvii. p. 254 [12].

Tetrao marmorata, La Llave, Reg. Trim. i. p. 144 [13]; La Nat. vii., App. p. 65 [14].

Grisescenti-olivascenti-brunneus, brunneo minute irroratus, fasciis irregularibus albidis vel ochracescentibus notatus; tectricibus alarum et secundariis dorso concoloribus; primariis brunneis haud vermiculatis; supracaudalibus minute brunneo irroratis; rectricibus brunneis, medianis paullulum ochracescente nigroque vermiculatim fasciatis; pileo nigricante, plumis ochracescenti-brunneo terminatis; nucha magis rufescente; colli et interscapulii plumis medialiter castaneis, utrinque cinereo clare marginatis; capitis lateribus et gutture toto nigris, linea lata superciliari et altera infra-auriculari albis; præpectore et pectore toto cum colli lateribus cinereis, medialiter castaneis, quasi late striatis; pectore medio et abdomine summo sordide albicantibus; hypochondriis imis, crisso et subcaudalibus grisescenti-brunneis, his saturatioribus, omnibus indistincte albido nigroque transfasciatim lineatis; subalaribus eodem modo coloratis; remigibus intus brunneis: rostro, pedibus et iride corallinis, unguibus brunneis. Long. tota circa 15·0, alæ 6·9, caudæ 7·0, culm. 0·8, tarsi 2·0. (Descr. avis adulti ex Valley of Mexico. Mus. nostr.)

Hab. Mexico [1 3 13 14] (*White* [3 6], *Mann* [8]), Alpine region of Orizaba, Vera Cruz (*Sumichrast* [7]), Sierra Nevada de Colima (*Lloyd & Richardson* [3]), Michoacan, Pacific slope of Morelos, Cordillera of Guerrero, and Eastern Oaxaca (*Nelson & Goldman* [9 10 11 12]), Omilteme 8000 feet (*Mrs. H. H. Smith* [3]), Oaxaca (*Trujillo* [3]).

This Long-tailed Partridge is an inhabitant of the highlands of Mexico. It has been found in several districts by Messrs. Nelson and Goldman, and the former has recognized four separate races of *D. macrurus*. The typical form Mr. Nelson considers to be the bird found in the high pine- and fir-clad mountains about the Valley of Mexico, those inhabiting the other regions of Southern Mexico he believes to belong to different races. *D. oaxacæ*, from Totontepec, frequents the "mountains of Eastern Oaxaca, from the Cerro San Felipe to Mount Zempoaltepec." The white eyebrow and white cheek-stripe are less distinct than in *D. macrurus*. There are no white edges to the feathers on the back of the neck, and the neck and sides of the breast are almost uniform, the ashy edges to the feathers being very narrow. *D. oaxacæ* is also said by Mr. Nelson to be a much darker bird than *D. macrurus*, "and is characterized by a suppression of the lighter markings seen in that species" [9].

D. macrourus griseipectus, from Huitzilac, Morelos, inhabits the "heavy oak-forest on the Pacific slope of the Cordillera, in the States of Morelos and Mexico." The rufous stripes on the breast are nearly obsolete, so that the general colour of this portion of the body is "nearly uniform dingy grey; the back, rump, wings, and flanks are darker and more olive than in *D. macrurus*," and the flanks are said to have very indistinct narrow lines of rufous [10].

D. macrourus striatus, from Chilpancingo, Guerrero, is found in "the mixed forest of oaks, pines, and firs on the high Cordillera of Guerrero above 8000 feet. It is rather smaller than the other forms, with a longer and more slender beak. The most conspicuous character is the heavy rufous shaft-lines of the feathers along the entire flanks, which do not become obsolete posteriorly as in the rest. The back is very dark, and the rump and upper tail-coverts lack the whitish mottling. The tail also is darker" [11].

Mr. Ogilvie Grant, who has made the Game-Birds his special study, does not admit that the characters of these races are worthy of recognition, and we have also been unable, after an examination of our series of specimens, to find a confirmation of the facts adduced by Mr. Nelson. There is undoubtedly a considerable individual variation in examples from the same district, due probably to the age of the birds. These Partridges are so rare and difficult to procure, that a much larger series is required before it is possible to arrive at a definite conclusion.

Mr. Nelson ('Auk,' xix. p. 388) still maintains the validity of the various races of *D. macrurus* described by him.

We have no notes on the habits or nesting of *D. macrurus*.

2. Dendrortyx barbatus.

Dendrortyx barbatus, Gould, Monogr. Odontoph. t. 22 [1]; Scl. P. Z. S. 1857, p. 206 [2]; 1859, p. 369 [3]; Sumichr. La Nat. v. p. 229 [4]; Grant, Cat. Birds Brit. Mus. xxii. p. 393 [5]; Handb. Game-Birds, ii. p. 113 [6].

D. macruro similis, sed pileo cinerascenti-brunneo, capitis lateribus et gutture plumbescenti-cinereis, et præcipue præpectore et pectore saturate cinnamomeis facile distinguendus. Long. tota circa 12·5, alæ 6·4, caudæ 4·6, culm. 0·9, tarsi 1·9. (Descr. avis adulti ex Jalapa. Mus. nostr.)

Juv. adultis similis, sed subtus pallidior, et plaga pectorali cinnamomea nigro obscure fasciata, plumis nonnullis albidis nigro transfasciatis instructa. (Descr. av. juv. ex Jalapa. Mus. nostr.)

Hab. South-eastern Mexico, Jalapa (*Sallé* [2], *de Oca* [3 5]), Orizaba (*Sumichrast* [4]).

The range of the Bearded Long-tailed Partridge appears to be limited to the highland forests of Vera Cruz. It is a rarer bird than *D. macrurus*, and nothing has been recorded respecting its habits.

3. Dendrortyx leucophrys.

Ortyx leucophrys, Gould, P. Z. S. 1843, p. 132 [1].

Dendrortyx leucophrys, Gould, Monogr. Odontoph. t. 21 [2]; Scl. & Salv. Ibis, 1859, p. 226 [3]; Lawr. Ann. Lyc. N. Y. ix. p. 140 [4]; v. Frantz. J. f. Orn. 1869, p. 373 [5]; Boucard, P. Z. S. 1878, pp. 40, 42 [6]; Zeledon, Pr. U. S. Nat. Mus. viii. p. 112 [7]; An. Mus. Nac. Costa Rica, 1887, p. 128 [8]; Grant, Cat. Birds Brit. Mus. xxii. p. 394 [9]; Handb. Game-Birds, ii. p. 114 [10].

D. macruro similis, sed saturatior, maculis irroratis notæi paucioribus, et magis ochracescentibus; tectricibus alarum rufescentioribus, primariis extus rufis; collo postico et interscapulio saturate cinereis, medialiter late castaneis; pileo postico sordide castaneo, fronte et supercilio albidis, vertice cinerascente, regione parotica cinerea; mento et gula summa albis; gutture reliquo cinereo nigro late striolato; præpectore et pectore cinereis, plumis medialiter castaneis; corpore reliquo subtus sordide cinerascenti-brunneo, hypochondriis medialiter castaneis. Long. tota circa 13·1, alæ 6·0, caudæ 5·15, culm. 0·8, tarsi 1·9. (Descr. avis adulti ex Dueñas. Mus. nostr.)

Hab. Guatemala, Coban [1 2 3], Dueñas (*O. S.* [9]), Panajachel 5000 feet, Solola (*Richardson* [9]); Costa Rica [7], Las Cruces, Candelaria Mountains [4], La Palma de San José [8] (*Zeledon*), Dota Mountains (*Carmiol* [4], *v. Frantzius* [5]), Poas (*v. Frantzius* [5]), Volcan de Irazu (*Boucard* [6]).

This Partridge is easily recognized from all the other members of the genus by its white forehead and throat. It inhabits the thick forests of the highlands of Guatemala and Costa Rica. According to von Frantzius, *D. leucophrys* is known in the latter country as the "Chirascuá" [5], on account of its peculiar cry, which is heard before sunset. The bird is much sought after on account of the excellence of its flesh, but is difficult to shoot, being extremely wild.

4. Dendrortyx hypospodius.

Dendrortyx hypospodius, Salv. Bull. Brit. Orn. Club, vi. p. v [1].

D. leucophryi similis, sed corpore subtus minime rufo guttato, pectoris et hypochondriarum plumis saturate griseis, stria rhachidali nigra; fronte, superciliis et gutture sordide albidis; scapularibus et secundariis extus fere unicoloribus indistincte vermiculatis, maculis majoribus cervinis nullis; pedibus, ut videtur,

obscurioribus, tarsis postice fere nigricantibus. Long. tota circa 12·0, alæ 5·9, caudæ 5·0, tarsi 2·0, dig. med. cum ungue 2·05. (Descr. maris adulti typ. ex Azahar de Cartago. Mus. nostr.)

Hab. Costa Rica, Azahar de Cartago [1], Alajuela, Estrella, and La Palma de San José (*Underwood, in litt.*).

This species is very distinct from any of the others noticed above, by reason of its white throat and dark leaden-grey under surface, the feathers being centred with broad black shaft-streaks.

We have no information at present as to its habits.

CALLIPEPLA.

Callipepla, Wagl. Isis, 1832, pp. 277, 1229; Grant, Cat. Birds Brit. Mus. xxii. p. 394 (1893).

The single species of this genus may be distinguished by the colour of the sexes being almost similar, and by the short crest, which does not extend much beyond the feathers of the head. The tail is about three-fourths of the length of the wing and is composed of fourteen feathers.

1. Callipepla squamata.

Ortyx squamatus, Vigors, Zool. Journ. v. p. 275 [1].

Callipepla squamata, Gould, Monogr. Odontoph. t. 19 [2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 307 [3]; Baird, Brew., & Ridgw. N. Amer. Birds, iii. p. 487 [4]; Sumichr. La Nat. v. p. 231 [5]; Herrera, La Nat. (2) i. pp. 185, 327 [6]; Allen, Bull. Am. Mus. N. H. v. p. 34 [7]; Bendire, Life Hist. N. Amer. Birds, p. 18, t. 1. figs. 4, 5 (1892) [8]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 790 [9]; Grant, Cat. Birds Brit. Mus. xxii. p. 395 [10]; Handb. Game-Birds, ii. p. 115 [11]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 108 [12]; Dwight, Auk, xvii. p. 47 [13].

Callipepla squammata, Dugès, La Nat. i. p. 141 [14].

Tetrao cristata, La Llave, Reg. Trim. i. p. 144 [15]; La Nat. vii., App. p. 65 [16].

Callipepla strenua, Wagl. Isis, 1832, p. 278 [17].

Callipepla squamata castanogastris, Brewst. Bull. Nutt. Orn. Club, viii. p. 34 [18]; Bendire, Life Hist. N. Amer. Birds, p. 22, t. 1. figs. 6, 7 [19]; A. O. U. Check-l. ed. 2, p. 108 [20].

Callipepla squamata, subsp. *castaneiventer*, Grant, Cat. Birds Brit. Mus. xxii. p. 396 [21]; Handb. Game-Birds, ii. p. 117 [22].

Supra cinerascenti-brunnea, secundariis intimis dorso concoloribus et intus late albo marginatis; collo postico et laterali et interscapulio clarius cinereis, plumis nigricanti-brunneo marginatis quasi squamatis; remigibus sepiariis; rectricibus cinereis; pileo cineraceo, fronte canescente; facie laterali et pilei lateribus posticis clare cinereis, regione parotica brunnescente; cristæ plumis isabellino-brunneis, longioribus albis; gula pallide ochracea; gutturis imi et præpectoris plumis clare cinereis, medialiter brunneo sagittatis, plumis gastræi totius nigricanti-brunneo marginatis, quasi squamatis; pectore et abdomine albicantioribus, vix ochraceo lavatis; corporis lateribus cinereis, late albo striatis; hypochondriis imis et subcaudalibus albis, brunneo sagittatim notatis; ala intus cineracea, subalaribus albido marginatis: rostro nigro; pedibus pallide brunneis; iride brunnea. Long. tota circa 9·5, alæ 4·75, caudæ 3·0, culm. 0·6, tarsi 1·2. (Descr. maris adulti ex Chupadero. Mus. nostr.)

♀ mari similis, sed paullo minor, gutture et facie laterali fusco indistincte striatis; maculis medianis brunneis sagittiformibus præpectoris et pectoris magis distincte notatis. Long. tota circa 9·5, alæ 4·9. (Descr. feminæ adultæ ex New Mexico. Mus. nostr.)

Hab. North America, New Mexico [8 10], Arizona [8 10], Centr. and W. Texas [8 10 12], Lower Rio Grande Valley [18 21].—Mexico [1 2 4] (*Dugès* [14], *La Llave* [15 16], *Petz* [17]), San Pedro, Bisbee, Sonora (*Robinette* [7]), Chupadero, and San Diego, Chihuahua (*Lloyd* [10]), Durango (*Grayson*[3]), Nuevo Leon (*Couch* [4], *Brewster* [18]), Nuevo Laredo, Tamaulipas (*Armstrong* [21]), Plains of San Luis Potosi (*Richardson* [10]), Guanajuato (*Dugès* [14]), Guadalajara, Jalisco, Ahualulco (*Jouy* [9]), Valley of Mexico (*Herrera* [6]), near the city of Mexico (*Sumichrast* [5 10]).

Bendire [8] states that in North America the Scaled Partridge is also known as the Blue Quail or White Top-knot Quail, and is found abundantly on the plateaux bordering the principal streams, ranging from an altitude of about 1500 to nearly 7000 feet. In Southern Arizona it avoids the timbered country, preferring the most barren and dry portions of that scantily watered territory, and frequenting the foot-hills and mesas a few miles from the river-beds, which are generally dry for the greater part of the year. The coveys love the sandy tableland, and spend much of their time in taking sand-baths and pecking and chasing one another like a brood of young chickens. Though often met with far from water, they regularly visit the streams, often travelling several miles to drink. Owing to the barren nature of the country they generally frequent, this bird is comparatively little hunted, but is nevertheless exceedingly shy and wary. It is difficult to flush, and when disturbed trusts almost entirely to its legs as a means of escape, running very rapidly through the bushes and vegetation. If flushed, the coveys scatter in different directions, and after flying a short distance, again commence to run. As soon as the alarm is over, the old birds reassemble the flock by whistling a low call-note. Towards the end of the summer and in autumn they are generally found in packs containing several broods, and as many as sixty or eighty individuals may sometimes be seen together, often associating with Gambel's Quail; they are easily trapped in autumn and winter, and many are caught by the natives and taken to the markets of the larger towns.

The nest is placed on the ground among very varied surroundings—cultivated fields, meadows, or barren flats being generally selected. The eggs vary from nine to sixteen in number, and are pale creamy-buff, finely dotted and spotted all over with reddish or purplish-brown.

Mr. Dwight [13] gives an interesting account of the early stages and moults of the Scaled Partridge, his facts being gathered from an examination of a very large number of specimens.

The race called *C. castaneiventer* differs from typical *C. squamata* in having the general colour of the middle feathers of the breast and belly deeper buff or ochraceous in both sexes: the male has a dark reddish-chestnut patch on the belly, this patch being sometimes found in the female also. The mating- and nesting-season of this race are said to commence somewhat earlier than is the case with *C. squamata*.

LOPHORTYX.

Lophortyx, Bonap. Geogr. & Comp. List Birds Eur. & N. Amer. pp. 42, 43 (1838); Grant, Cat. Birds Brit. Mus. xxii. p. 399 (1893).

The Quails belonging to this genus have the plumage differently coloured in the two sexes and the crest well developed, extending much beyond the feathers of the head. The tail is about three-fourths of the length of the wing, and composed of twelve feathers.

Of the three species recognized, two are found within our limits, while the third, the well-known Californian Quail, occurs to the north.

1. Lophortyx gambeli.

Lophortyx gambelii, Gambel, Pr. Ac. Philad. 1843, p. 260[1]; Baird, Brew., & Ridgw. Birds N. Amer. iii. pp. 482, 523[2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 307[3]; Belding, Pr. U. S. Nat. Mus. vi. p. 344[4]; Grant, Cat. Birds Brit. Mus. xxii. p. 403[5]; Handb. Game-Birds, ii. p. 124[6]; Ibis, 1902, p. 238[7]; Bendire, Life Hist. N. Amer. Birds, p. 29, t. 1. figs. 11–14 (eggs)[8].

Callipepla gambeli, Allen, Bull. Amer. Mus. N. H. v. p. 33[9]; Dwight, Auk, xvii. p. 49[10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 109[11].

Callipepla gambeli fulvipectus, Nelson, Auk, xvi. p. 26[12].

Supra griseus, scapularibus et secundariis internis magis cinerascentibus, intus albo marginatis, quasi striatis; colli postici plumis medialiter nigro striolatis; alis cineraceis, remigibus pallide brunneis, rhachidibus nigricantibus, secundariis externis albido marginatis; rectricibus cinereis, rhachidibus nigris; fronte cana, plumis criniformibus; fascia angusta verticali utrinque nigro marginata; crista elongata nigra apicem versus graduatim latiore et quadrata; pileo reliquo castaneo usque ad nucham producto; linea superciliari indistincta alba; regione parotica cinerascenti-brunnea; facie laterali et gutture toto nigris, fascia alba ab oculo postico ducta distincte circumdatis; præpectore et pectoris lateribus clare cinereis; pectore pallide ochraceo, plagam conspicuam exhibente; abdomine medio nigro, imo ochracescente; corporis lateribus saturate castaneis, albo clare striatis; hypochondriis albidis, cinereo vix castaneo tincto late striatis, subcaudalibus albidis medialiter cineraceo striatis, alis intus cineraceis. Long. tota circa 9·5, alæ 4·3, caudæ 3·2, culm. 0·6, tarsi 1·1. (Descr. maris adulti ex Agua Caliente, California. Mus. nostr.)

♀ mari dissimilis, pileo dorso concolore, cervicis plumis clarius schistaceis, plumis brunneo marginatis et medialiter striatis; facie laterali et gutture cinerascenti-brunneis; præpectore sordide schistaceo; plaga pectorali pallide ochracea, plumis medialiter fusco striolatis. Long. tota circa 9·5, alæ 4·9. (Descr. feminæ adultæ ex Gila River, Arizona. Mus. nostr.)

Hab. North America, Western Texas, New Mexico, Arizona, Southern Utah, Southern Nevada, Southern California in the Colorado Valley[11].—Mexico, Sonora (*Grayson*[3]), Santa Barbara (*Robinette*[9]), Hermosillo (*Ferrari-Perez*[5]), Guaymas (*Belding*[4]), Rio Mayo (*Goldman*[12]).

L. gambeli is abundant in parts of North Mexico, wherever water is found. Mr. Nelson[12] has separated the Sonora bird as distinct from the typical race from Southern Nevada, on account of its larger bill and darker and more intense colours, but we do not think that these characters are sufficient to distinguish the two forms. The species is common in Arizona, ranging to an altitude of 5000 feet, and in New

Mexico young birds have been observed in the pine-forests at an elevation of between 8000 and 9000 feet. The mating-season in North America commences, according to Bendire [8], towards the end of February and the breeding-time about the first week in April or occasionally later. Taking up a position on some stump or branch, and standing perfectly erect with bill pointing straight upwards, wings drooped, and tail slightly spread, the male utters his loud call-note at intervals of a few minutes for half an hour or more at a time. This he repeats several times a day, and his challenge is answered by any other male in the vicinity. During the breeding-season they fight constantly with one another, each defending his home against intrusion with great valour.

During the intense heat of the summer months this species frequents the cool and shady spots at the bottom of the creeks, and frequently perches on trees, the majority roosting in them. The nest is usually a slight hollow scratched in the ground lined with bits of dry leaves, and sheltered by dead grass. Occasionally it is placed above the ground on the top of a stump, while sometimes an old nest of some other bird is used. The eggs are normally ten to twelve, but much larger numbers are sometimes found, no doubt the produce of more than one hen. The ground-colour of the shell is creamy-white or pale buff, spotted and blotched with reddish-brown or dark brown.

2. **Lophortyx douglasi.**

Ortyx douglasi, Douglas, Trans. Linn. Soc. xvi. p. 145 [1].
Callipepla douglassii, Gambel, Journ. Ac. Philad. (n. s.) i. p. 218 [2].
Lophortyx douglasi, Grant, Cat. Birds Brit. Mus. xxii. p. 404 [3]; Handb. Game-Birds, ii. p. 126 [4].
Ortyx elegans, Lesson, Cent. Zool. p. 189, t. 61 [5].
Callipepla elegans, Gould, Monogr. Odontoph. t. 18 [6]; Finsch, Abh. nat. Ver. Brem. ii. p. 357 [7]; Lawr. Mem. Bost. Soc. N. H. ii. p. 306 [8]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [9].
Ortyx spilogaster, Vigors, P. Z. S. 1832, p. 4 [10].
Callipepla elegans bensoni, Ridgw. Pr. U. S. Nat. Mus. x. p. 148 [11].

Supra cinereus, dorsi plumis macula triangulari magna castanea terminaliter notatis; scapularibus et secundariis intimis fere castaneis, late albo nigro, intus fimbriato marginatis; remigibus sepiariis; dorso postico, uropygio et supracaudalibus olivascenti-brunneis, his minute albido irroratis; rectricibus cinereis; pilei plumis schistaceo-cinereis, rhachidibus nigris; crista elongata, rufa; facie laterali albida nigro lineata; gula alba, nigro guttatim fasciata; gutture imo et præpectore schistaceis, colli lateribus castaneo maculatis; corpore reliquo subtus schistaceo, maculis albis nigro circumdatis ocellato; hypochondriis late castaneo striatis, et maculis albis ocellatis; remigibus intus cineraceis. Long. tota circa 8·5, alæ 4·5, caudæ 2·75, culm. 0·7, tarsi 1·1.

♀. Brunnescentior, crista brunnea distinguenda; gutture albo, nigro punctato; corpore reliquo subtus cinerascenti-brunneo, maculis albis ocellato, hypochondriis late brunneo striatis. Long. tota circa 8·0, alæ 4·3. (Descr. maris et feminæ ex San Blas. Mus. nostr.)

Hab. Mexico [3 10], Ysleta, Guadalupe, Quiriego, Sierra de Alamos (*Lloyd* [3]), Nacori, Sonora (*Robinette* [9]), Campos (*Benson* [11]), Mazatlan (*Beechey* [1 3], *Gambel* [2], *Grayson* [7 8]), Presidio de Mazatlan (*Forrer* [3]), San Blas, Tepic (*Richardson* [3]), Jalisco and Colima (*Grayson* [8]).

Douglas's Quail was first described from a female specimen obtained by Captain

Beechey at Mazatlan, and the type is preserved in the British Museum. Nothing has been recorded about the habits of this species, but they are probably very similar to those of its northern ally *L. gambeli*.

PHILORTYX.

Philortyx, Gould, Monogr. Odontoph. t. 14 (1846), Introd. p. 17 (1850); Grant, Cat. Birds Brit. Mus. xxii. p. 405 (1893).

In the Barred Partridge the sexes are similar in plumage, and have a well-developed crest extending much beyond the feathers of the head. The tail is nearly three-fourths of the length of the wing, and composed of twelve feathers. The first primary-quill is intermediate in length between the ninth and tenth.

Only one species is known.

1. Philortyx fasciatus.

Ortyx fasciatus, Gould, P. Z. S. 1843, p. 133 [1]; Cooper, Bull. Nutt. Orn. Club, ii. p. 95 [2].

Philortyx fasciatus, Gould, Monogr. Odontoph. t. 14 [3]; Scl. P. Z. S. 1864, p. 178 [4]; Lawr. Mem. Bost. Soc. N. H. ii. p. 307 [5]; Grant, Cat. Birds Brit. Mus. xxii. p. 406 [6]; Handb. Game-Birds, ii. p. 127 [7].

Ortyx perrotiana, Des Murs, Rev. Zool. 1845, p. 207 [8].

Philortyx personatus, Ridgw. Auk, iii. p. 333 [9]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 176 [10].

Supra griseo-brunneus, plumis pallide arenariis vel griseo vermiculatim limbatis et nigro maculatis; scapularibus utrinque nigro conspicue maculatis; tectricibus alarum et secundariis intimis eodem modo maculatis et latius arenario marginatis; remigibus brunneis, primariis cano marginatis, secundariis fulvo vix fasciatis; rectricibus griseis, nigro et arenario anguste vermiculatim transfasciatis; pileo sordide cinnamomeo; fronte, loris et facie laterali magis cinerascenti-brunneis; regione postauriculari saturatiore brunneo; supercilio albido indistincto; cristæ plumis elongatis nigris, rufo terminatis; gula alba; gutture et præpectore rufescenti-brunneis, plumis albido vel griseo marginatis, quibusdam nigro subterminaliter fasciatis; corpore reliquo albo, lateribus conspicue albo nigroque transfasciatis; crisso et subcaudalibus pallide cervinis, his late nigro medialiter striatis; subalaribus cineraceis, externis rufescenti-brunneis; remigibus intus cineraceis. Long. tota circa 7·0, alæ 4·2, caudæ 2·4, culm. 0·5, tarsi 1·05.

♀ mari similis. Long. tota circa 7·5, alæ 4·0. (Descr. maris et feminæ ex Colima. Mus. nostr.)

Juv. adultis similis, sed superciliis et gutture superiore nigris.

Pull. Vinaceo-brunneus, arenario nigroque maculatim transfasciatus, plumis medialiter fulvescenti-albo striolatis; cauda vinaceo-brunnea, anguste nigro et fulvo transfasciata; pileo castaneo, fascia superciliari lata et facie laterali rufescentibus; genis et gula summa sulfureis; corpore reliquo subtus nigro maculato, albo fasciato, rhachidibus plumarum conspicue albis.

Hab. Mexico [3 6 8] (*White* [4 6]), Colima (*Xantus* [2 5], *Richardson* [6]), Sierra Madre del Sur, Dos Arroyos, Guerrero (*Mrs. H. H. Smith* [6]), Chietla, Puebla (*Ferrari-Perez* [9 10]).

Nothing is known concerning the habits of this bird, which appears to be confined to Mexico. The locality "California," given by Gould when describing the species, is no doubt erroneous. Immature specimens are peculiar in differing from the adult in having the eyebrow-stripes and the greater part of the chin and throat black, and have been described in this phase of plumage under the name *P. personatus*.

EUPSYCHORTYX.

Eupsychortyx, Gould, Monogr. Odontoph. t. 10 (1844), Introd. p. 15 (1850); Grant, Cat. Birds Brit. Mus. xxii. p. 407 (1893).

The Crested Quails have the sexes somewhat different from one another in plumage, the crest is well or moderately developed. The first primary-quill is intermediate in length between the eighth and ninth. The tail is rather more than half the length of the wing and composed of twelve feathers. Seven species are known, four of which occur within our limits.

1. Eupsychortyx leucopogon.

Ortyx leucopogon, Less. Rev. Zool. 1842, p. 175 [1]; Des Murs, Icon. Orn. t. 36 (crest omitted) [2].

Eupsychortyx leucopogon, Gould, Monogr. Odontoph. t. 13 [3]; Grant, Cat. Birds Brit. Mus. xxii. p. 408 [4]; Handb. Game-Birds, ii. p. 130 [5].

Ortyx leucotis, Gould, P. Z. S. 1843, p. 133 [6].

Eupsychortyx leucotis, Gould, Monogr. Odontoph. t. 10 [7]; Salv. Ibis, 1876, p. 379 [8]; Scl. & Salv. P. Z. S. 1879, p. 544 [9].

Rufescenti-brunneus, fasciolis nigris et rufis angustissime vermiculatus; scapularibus, dorso postico et uropygio magis distincte nigro et rufo notatis, plumis plerisque albido fimbriatis; scapularibus et secundariis intimis albo punctatis, his etiam intus fulvo distincte marginatis; tectricibus alarum dorso concoloribus, sed albo punctulatis; rectricibus brunneis, nigro fulvoque irroratim transfasciatis; pileo et crista elongata pallide brunneis, fronte cum facie laterali, genis anticis et mento albidis; fascia supraparotica vinaceo-castanea, fasciis duabus ochraceis nigrisque ad latera pilei postici positis; colli plumis albo nigroque ocellatis, gutture imo eodem modo coloratis; genis posticis et gula vinaceo-castaneis; præpectore et corporis lateribus vinaceo-castaneis, maculis albis ocellatis, et nigro transfasciatis, pectore medio et abdomine ochraceo eodem modo ocellatis; tibiis et crisso pallide ochraceis, fusco fasciatis; subcaudalibus pectori concoloribus et eodem modo notatis; remigibus intus et subalaribus cinerascentibus. Long. tota circa 7·5, alæ 4·1, caudæ 2·1, culm. 0·55, tarsi 1·3. (Descr. maris adulti ex Veragua. Mus. nostr.)

♀ gutture albo et nigro striato, cervice undique, præpectore et corporis lateribus albo et nigro ocellatis, pectore medio et abdomine ochraceis nigro transfasciatis distinguendus. Long. tota circa 7·0, alæ 3·9. (Descr. feminæ adultæ ex Antioquia. Mus. nostr.)

Hab. Panama, Calobre, Veraguas (*Arcé* [4 8]), San Carlos [1 3].—Colombia, Antioquia [9], Bogota [4 6].

This species is easily recognized by its white face and chin, and the chestnut throat and eyebrow. It is a Colombian bird which extends northwards into the State of Panama.

Nothing has been recorded of its habits; but the eggs, discovered by Salmon at Medellin, in Antioquia [9], are pale whitish-buff, with large tawny blotches, and in some specimens freckled with small spots of the same colour.

2. Eupsychortyx leylandi.

Ortyx leylandi, Moore, P. Z. S. 1859, p. 62 [1]; Scl. & Salv. Ibis, 1859, p. 226 [2]; Taylor, Ibis, 1860, p. 312 [3]; Lawr. Ann. Lyc. N. York, ix. p. 139 [4]; v. Frantz. J. f. Orn. 1869, p. 373 [5]; Boucard, P. Z. S. 1878, p. 42 [6]; Nutting, Pr. U. S. Nat. Mus. vi. p. 390 [7]; Zeledon, Pr. U. S. Nat. Mus. viii. p. 112 [8].

Colinus leylandi, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 128 [9]; Cherrie, Auk, 1892, p. 329 [10].

Eupsychortyx leylandi, Grant, Cat. Birds Brit. Mus. xxii. p. 411[11]; Handb. Game-Birds, ii. p. 132[12]; Underwood, Ibis, 1896, p. 449[13].

Eupsychortyx leucofrenatus, Elliot, Ann. Lyc. N. York, vii. p. 106, t. 3[14].

E. leucopogoni similis, sed saturatior; pileo brunneo, regione parotica nigricante, fascia postoculari et altera suboculari ochraceis; gutture nigro, et corpore subtus vinaceo-brunneo, albo ocellato distinguendus. Long. tota circa 8·0, alæ 4·4, caudæ 2·0, culm. 0·6, tarsi 1·1.

♀ *E. leucopogoni* ♀ similis, sed saturatior, notæo maculis majoribus nigris notato; pileo et crista nigricanti-brunneis, nucha rufescente; loris et supercilio lato ochraceis, superne nigro marginatis; regione parotica saturate brunnea; collo laterali et postico albo nigroque conspicue maculato; genis et gula ochraceis; gutture imo et præpectore vinaceo-brunneis, maculis albis nigro circumdatis ocellatis; pectore et abdomine albis; corporis lateribus albo nigroque ocellatis, plumis medialiter vinaceo-brunneis, quasi late longitudinaliter striatis. Long. tota circa 8·0, alæ 4·2. (Descr. maris et feminæ ex Chinandega. Mus. nostr.)

Hab. Honduras (*Edwards*[14]), between Omoa and Comayagua (*Leyland*[1 2], *Taylor*[3]), Paraiso, Jalapa, near the frontier of Honduras (*Richardson*); Nicaragua, Sucuyá (*Nutting*[7]), Ocotal, Matagalpa, Chinandega (*Richardson*[11]); Costa Rica (*Endrés*[11], *Carmiol*[11], *Dow*[11], *Zeledon*[8]), Heredia and Barba (*v. Frantzius*[5]), San José (*Carmiol*[4 11], *Boucard*[6], *Zeledon*[9], *Cherrie*[10]), Barranca (*Carmiol*[4]), Alajuela (*Zeledon*[9]), Irazu district (*Rogers*[11]), Miravalles[13], Estrella (*Underwood in litt.*).

E. leylandi is a much darker bird than *E. leucopogon* and shows no chestnut on the face and throat. The throat is black, like the ear-coverts, and there are two bands of ochraceous buff on the sides of the head, one running from above the eye to above the end of the ear-coverts, and the other extending from below the latter over the hinder cheeks. The under surface of the body is dark vinaceous-brown, not rufous, and is plentifully ocellated with white spots as in the other members of the genus. The female has the throat, sides of face, and eyebrow of an ochraceous-buff colour.

Mr. Elliot[13] has described a bird from Honduras as *E. leucofrenatus*, on account of the white eyebrow and cheek-stripe. In our collection we have a specimen from Ocotal, Nicaragua, and we agree with Mr. Ogilvie Grant that this is an immature bird of *E. leylandi*. The throat is rufous, mottled with black spots, as if it would ultimately become quite black.

In habits this bird appears to resemble the common Virginian Quail. According to von Frantzius[5], it is known in Costa Rica as the "Perdiz," and is found in the open country in the neighbourhood of thick underwood and cover, as well as in the coffee-plantations and maize-fields. Associating in flocks of from fifteen to twenty individuals, M. Boucard[6] found it common in the Valley of San José during the rainy season from May to December, after which it entirely disappeared.

Mr. G. C. Taylor[3] frequently met with coveys of these birds in Honduras, especially on the high ground near Comayagua. They were usually lying in long grass, and when disturbed flew for shelter to the thick bushes. Without a dog they were difficult to flush and not easily seen when on the wing, while the ground they frequented was so full of ticks ("garrapatas") as to destroy all keenness in pursuing them.

3. Eupsychortyx nigrogularis.

Ortyx nigrogularis, Gould, P. Z. S. 1842, p. 181[1]; Monogr. Odontoph. t. 4[2]; Gray, Gen. Birds, iii. p. 514, t. 132[3]; Moore, P. Z. S. 1859, p. 63[4]; Scl. & Salv. Ibis, 1859, p. 225[5]; Lawr. Ann. Lyc. N. York, ix. p. 209[6]; Boucard, P. Z. S. 1883, p. 461[7].

Colinus nigrogularis, Stone, Pr. Ac. Philad. 1890, p. 204[8]; Nelson, Auk, xv. p. 122[9].

Eupsychortyx nigrogularis, Grant, Cat. Birds Brit. Mus. xxii. p. 412[10]; Handb. Game-Birds, ii. p. 133[11].

Colinus nigrogularis segoviensis, Ridgw. Pr. U. S. Nat. Mus. x. p. 593[12].

E. leylandi similis et gutture nigro, sed interscapulio et collo postico et laterali castaneis albo ocellatis; pileo brunneo, fascia laterali utrinque alba; fascia altera superciliari nigra; regione parotica et suboculari albis; gutture imo et pectore toto albis, plumis nigro marginatis quasi squamatis; corporis lateribus castaneis, plumis late medialiter albis. Long. tota circa 7·8, alæ 4·3, caudæ 2·2, culm. 0·6, tarsi 1·15.

♀ *E. leylandi* ♀ similis, sed pileo brunneo nigro striolato, gutture imo et præpectore albo ocellatis, plumis nigro marginatis, corpore reliquo subtus nigro fasciato distinguendus. Long. tota circa 7·5, alæ 4·0. (Descr. maris et feminæ ex Buctzotz, Yucatan. Mus. nostr.)

Hab. MEXICO, Yucatan (*Dyson*[2], *Cabot*[5]), Chablé, Tizimin, Buctzotz, and Peto (*Gaumer*[7 10]), Merida (*Schott*[6 10]), Izamal (*Stone & Baker*[8]); BRITISH HONDURAS, Belize (*Leyland*[4 5]); HONDURAS (*Dyson*[2]); NICARAGUA, Segovia River (*Townsend*[12]).

E. nigrogularis has a black throat like *E. leylandi*, but is easily recognized by the colour of the under surface, which is for the most part white, the feathers being margined with black, imparting a scaled, rather than an ocellated, appearance to the bird. The chestnut mantle, with the pear-shaped white centres to the feathers, and the white ear-coverts are also distinguishing characteristics of this species. The females of the two birds are very similar, both having ochraceous throats and eye-brows, but the hen of *E. nigrogularis* is readily distinguished by the absence of black streaks on the throat, and by its ocellated lower throat and fore-neck, with none of the vinaceous-brown shade which is apparent in *E. leylandi*.

Dr. Cabot[2], who observed the species in Yucatan, gives an account of its habits. He states that its call so precisely resembles that of *Ortyx virginianus* that by imitating the call of the latter species a covey previously scattered will respond and may be easily found. The mode of roosting of the two birds is also similar, both occasionally perching on trees. The Maya or Indian name for *E. nigrogularis* is "Bêch," the "e" being pronounced with a guttural sound. This is undoubtedly the bird offered by the natives as sacrifices to their idols, and mentioned in the works relating to the discovery and conquest of Yucatan[2]. According to Gaumer[7], it is sometimes found in dense forest, but more frequently in maize-fields. Dyson[2] says that the species is common in Yucatan and on the pine-ridges of Honduras.

4. Eupsychortyx hypoleucus.

Eupsychortyx hypoleucus, Gould, P. Z. S. 1860, p. 62[1]; Grant, Cat. Birds Brit. Mus. xxii. p. 413[2]; Handb. Game-Birds, ii. p. 134[3].

Eupsychortyx leucopogon, Salv. & Scl. (nec Less.), Ibis, 1860, p. 277[4].

Speciebus præcedentibus similis, sed fronte et supercilio, facie laterali, gutture et corpore subtus mediano albis, corporis lateribus vinaceo-brunneis, nigro vermiculatim irroratis, maculis ovatis albis, nigro basaliter fasciatis, conspicue ocellatis distinguendus. Long. tota circa 7·5, alæ 4·2, caudæ 2·2, culm. 0·5, tarsi 1·0.

♀ *E. leylandi* ♀ similis, sed ubique pallidior et corpore subtus minus distincte nigro fasciato. Long. tota circa 7·5, alæ 4·0. (Descr. maris et feminæ ex San Gerónimo. Mus. nostr.)

Hab. GUATEMALA, San Gerónimo, Vera Paz (*O. S.*[2 4], *Hague*), highlands of Guatemala (*Richardson*).

According to Gould[1], the type of *E. hypoleucus*, procured from Verreaux, was obtained at "Acajutla, Mexico," but probably the locality is erroneous*. So far as we know, this species is confined to Guatemala. The specimen obtained by us at San Gerónimo was shot in a field of sugar-cane.

Nothing has been recorded concerning its habits.

ORTYX.

Ortyx, Steph. in Shaw's Gen. Zool. xi. p. 376 (1819); Grant, Cat. Birds Brit. Mus. xxii. p. 414 (1893).

Colinus, Less. Man. d'Orn. ii. p. 190 (1828); Grant, Ibis, 1902, p. 239.

In the Colins, or "Bob-Whites," the sexes differ in plumage, and have no distinct crest. The first primary-quill is intermediate in length between the seventh and eighth; the tail is rather more than half the length of the wing and is composed of twelve feathers.

Thirteen species of *Ortyx* are recognized, of which no less than nine occur within our limits. *O. virginianus* inhabits the Eastern United States, *O. floridanus* the peninsula of Florida, and *O. cubanensis* the Greater Antilles. *O. castaneus*, Gould, is only known from the type in the British Museum; the locality and other particulars are wanting. It has been suggested that this form may be merely a strongly marked rufous variety of *O. virginianus*, and this may eventually prove to be the case. We prefer to retain the name *Ortyx* for this genus, instead of that of *Colinus*, which has been recently adopted by American ornithologists †.

1. Ortyx texanus.

Ortyx texanus, Lawr. Ann. Lyc. N. Y. vi. p. 1[1]; Grant, Cat. Birds Brit. Mus. xxii. p. 419[2]; Handb. Game-Birds, ii. p. 139[3].

Ortix texanus, Dugès, La Nat. i. p. 141[4].

Colinus virginianus texanus, Stejn. Auk, 1885, p. 45[5]; Bendire, Life Hist. N. Amer. Birds, i. p. 8[6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 107[7]; Nelson, Auk, xv. p. 121[8]; xix. t. 14. fig. 5[9].

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* There is no place of this name to be found on the maps of Mexico. Acajutla, however, is a well-known port on the coast of Salvador.

† *Cf.* Ibis, 1902, p. 239, note.

Colinus texanus, Sharpe, Hand-list Birds, i. p. 45 [10]; Grant, Ibis, 1902, p. 239 [11]; 1903, p. 110 [12].
Colinus virginianus maculatus, Nelson, Auk, xvi. p. 26 [13]; xix. p. 389, t. 14. fig. 6 [14].

Supra brunneus, nigro et rufo vermiculatim variegatus vel fasciatus, interscapulio et tectricibus alarum vinaceo-castaneo indutis, plumis cinereo limbatis; tectricibus alarum et primariis sepiariis, secundariis dorso concoloribus et eodem modo variegatis, intimis intus ochraceo late limbatis; rectricibus cineraceis, supracaudalibus et rectricibus medianis nigro vermiculatim fasciatis; pileo rufescente, loris et fascia superciliari lata pure albis, nigro superne marginatis, hac postice ochracea, regione oculari et paroticali nigra, hac postice castanea; genis et gula pure albis; fascia lata infragulari nigra; præpectore pallide vinaceo-castaneo; corpore reliquo subtus albo, fasciis nigris transversis vel cordiformibus ornato; corporis lateribus vinaceo-castaneis, maculis ovatis albis et fasciis vel striis nigris ornatis; crisso albido; subalaribus pallide castaneis, apicem versus albidis et medialiter nigro striatis; subalaribus cinereis, albido marginatis; remigibus intus cinereis. Long. tota circa 7·5, alæ 4·3, caudæ 1·8, culm. 0·6, tarsi 1·1.

♀ a mari diversa, supercilio, facie laterali gulaque ochraceis; fascia transversa gutturali maculis nigris notata; præpectore rufescente, maculis albis et fasciolis nigris variegato. Long. tota circa 7·5, alæ 4·3. (Descr. maris et feminæ ex Corpus Christi, Texas. Mus. nostr.)

Hab. North America, Southern and Western Texas, north to the Indian Territory and Western Kansas [6 7].—Mexico, Nuevo Leon, Hacienda de las Escobas, San Agustin, San Pedro, Vaqueria, Estancia, Topo Chico (*Armstrong* [2]), Tamaulipas, Xicotencal, Soto La Marina, Sierra Madre above Ciudad Victoria (*Richardson* [2]), Alta Mira (*Nelson & Goldman* [13]), Matamoros (*Nelson* [9]), Guanajuato (*Dugès* [4]), Santana near Guadalajara, Jalisco (*Lloyd* [2]).

O. texanus is a form of the well-known Virginian Colin of North America. It is a resident in the greater part of Texas, excepting the so-called "Staked Plains," and is most abundant in the central part of the State. In Eastern Texas it is said to intergrade with the true *O. virginianus* [6].

Mr. Nelson has recently described the Tamaulipas bird as *Colinus virginianus maculatus*, and he figures a remarkable dark individual. The specimens from this locality, in our collection, show no differences from true *O. texanus*. The latter is a bird of the lowlands, and, according to Mr. W. Lloyd, is not met with above 2000 feet. It is of a singularly tame and unsuspicious nature, and falls an easy victim to foxes, hawks, and more especially to rattlesnakes [6].

The nest is a mere depression, and is often placed in a bunch of sedge. The eggs are sometimes as many as fifteen in number, of a dull white or yellowish colour, the latter tint probably being due to stain.

2. Ortyx pectoralis.

Ortyx pectoralis, Gould, P. Z. S. 1842, p. 182 [1]; Monogr. Odontoph. t. 5 [2]; Scl. P. Z. S. 1856, p. 310 [3]; 1857, p. 206 [4]; 1859, p. 369 [5]; Sumichr. La Nat. v. p. 231 [6]; Grant, Cat. Birds Brit. Mus. xxii. p. 421 [7]; Handb. Game-Birds, p. 142 [8]; Ibis, 1902, p. 240 [9]; 1903, p. 110 [10].
Ortix pectoralis, Dugès, La Nat. i. p. 141 [11].
Colinus pectoralis, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 176 [12]; Nelson, Auk, xv. pp. 117, 121 [13]; Auk, xix. t. 14. fig. 1 [14].

Colinus graysoni nigripectus, Nelson, Auk, xiv. p. 47[15]; xv. pp. 116, 121[16]; xix. p. 389, t. 14. fig. 2[17].

Colinus minor, Nelson, Auk, xviii. p. 47[18]; xix. p. 389, t. 14. fig. 3[19].

Supra brunneus, sicut in ceteris speciebus affinitis, albido nigroque fasciatim variegatus; pileo et regione parotica nigricantibus; loris, supercilio lato, facie laterali gulaque albis; torque lato præpectorali et colli lateribus nigris; corpore reliquo subtus castaneo, plumis nonnullis nigro marginatis. Long. tota circa 7·0, alæ 4·15, caudæ 2·0, culm. 0·6, tarsi 0·9. (Descr. maris adulti ex Jalapa. Mus. nostr.)

♀ a mari diversa, pileo brunneo; fascia superciliari gulaque ochraceis; præpectore minime castaneo, ochrascente tamen nigro maculato. (Descr. feminæ ex Mexico. Mus. Brit.)

Hab. Mexico[1 2 7], Eastern coast, Llanos de Paso de Ovejas, La Estanzuela (*Sumichrast*[6]), Atlixco, Puebla[15 16], Orizaba[13], and Carrizal[14], Vera Cruz, Palenque, Chiapas[18 19] (*Nelson*), Jalapa (*Sallé*[4], *De Oca*[5 7]), Cordova (*Sallé*[3]), Chietla, Vera Cruz (*Ferrari-Perez*[12]), Guanajuato (*Dugès*[11]).

The Chestnut-breasted Colin belongs to the section of the genus *Ortyx* in which all the species have a uniform rufous breast and abdomen, but a white throat. Mr. Nelson has described a *Colinus graysoni nigripectus* from the tableland of Southern Puebla (3000 to 6000 feet)[16], and another species, *C. minor*, from Chiapas[18]. Mr. Ogilvie Grant[9] has expressed an opinion that both these forms are inseparable from *O. pectoralis*. It seems extremely probable, from a comparison of specimens, that *O. nigripectus* is referable to *O. pectoralis*; but of *O. minor* from Chiapas we have no series before us, and the identity of this form with the above-mentioned bird may prove to be incorrect. In any case it can only be regarded as a small race of *O. pectoralis*; and Mr. Nelson's description in the 'Auk' for 1902[19] does not agree with his original diagnosis[18].

Near the city of Orizaba *O. pectoralis* has been found living in brush-grown and weedy old fields—sometimes straying about the coffee-plantations[13].

3. **Ortyx graysoni.**

Ortyx graysoni, Lawr. Ann. Lyc. N. Y. viii. p. 476[1]; Mem. Bost. Soc. N. H. ii. p. 306[2]; Grant, Cat. Birds Brit. Mus. xxii. p. 422[3]; Handb. Game-Birds, ii. p. 142, t. 32[4].

Colinus graysoni, Stejn. Auk, ii. p. 45[5]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 790[6]; Nelson, Auk, xv. p. 121[7].

O. pectorali similis, sed major: subtus pallidior, torque nigro gutturali angustiore. Long. tota circa 8·5, alæ 4·7, caudæ 2·4, culm. 0·65, tarsi 1·15. (Descr. maris adulti ex Santana. Mus. nostr.)

♀ *O. pectorali* ♀ similis, sed major. Long. tota circa 8·5, alæ 4·9. (Descr. feminæ ex Hacienda El Rosario. Mus. nostr.)

Hab. Mexico, Santana, near Guadalajara (*Lloyd*[3]), Guadalajara (*Grayson*[1 2], *Jouy*[6]), Hacienda El Rosario, Guadalajara (*Buller*), Lake Chapala (*Richardson*[3]), El Molino (*Jouy*[6]), Hacienda Angostura, Jalisco (*Jouy*[6], *Nelson*[7]), San Luis Potosi (*Nelson*[7]).

Grayson's Colin is a larger bird than *O. pectoralis*, and slightly paler below, and is

further distinguished by the narrower black collar on the lower throat. According to Mr. Nelson [7] it inhabits the tableland of Mexico, from San Luis Potosi and Northern Jalisco to the Valley of Mexico.

Like its allies, *O. graysoni* inhabits the open grassy country where there are patches of small trees and thickets of cacti. The neighbourhood of small streams appears to be a favourite resort, and it was on similar ground, near Guadalajara, that Grayson [2] first met with the species in coveys, though he found it extremely local.

4. Ortyx godmani.

Colinus godmani, Nelson, Auk, xiv. p. 45 [1]; xv. pp. 120, 121, t. 2 [2]; xix. t. 14. fig. 4 [3]; Grant, Ibis, 1902, p. 240 [4].

Gula alba, pilei plumis nigris, brunneo vel griseo marginatis; corporis lateribus castaneis, nigro marginatis, minime albo maculatis; secundariis intimis albo nec fulvo maculatis. (Descr. ex scriptis E. W. Nelson.)

Hab. South-eastern Mexico, coast-plains about Jaltipan and Minatitlan, Vera Cruz, and thence north to Lake Catemaco (*Nelson & Goldman* [1]).

We have seen no specimens of this Colin, which Mr. Nelson [1] says is a very distinct species and one of the most beautiful in the genus. Five adult examples were obtained, but from the description alone it is somewhat difficult to determine its nearest ally. *O. godmani* is stated to be darker in colour than *O. graysoni,* but Mr. Ogilvie Grant [4] thinks that it must be very near *O. cubanensis.* He observes [4]:—"The male appears to differ from the latter species chiefly in having the crown blackish, with brown and greyish edgings to the feathers; the sides, flanks, and belly chestnut, heavily margined with black, and *devoid of white spots*; and the tertials spotted with white instead of buff." The throat and sides of the face are described as white, in which characters *O. godmani* must resemble *O. graysoni*, but the "sides and lower portion of the neck, with the breast, are glossy black, the flanks, abdomen, and lower tail-coverts are light chestnut, with heavy black borders on the feathers of the flanks and abdomen [1]. In these respects the species apparently approaches *O. cubanensis*, as Mr. Grant observes, but it seems to be altogether a distinct form of Colin.

Mr. Nelson [2] gives the range as the lowlands of Southern Vera Cruz, probably also passing into Tabasco, occurring from the sea-level to 1500 feet. In his interesting article ('Auk,' xv. pp. 115–121) on the Mexican species of "Bob-White," he relates that after travelling for some time in South-western Mexico, he took the train to the port of Coatzacoalcos, on the Gulf of Mexico, and ascended the river of the same name to the town of Minatitlan, a place once noted for its enormous trade in Spanish cedar and dye woods. Here he remained for some days in the midst of the coast lowlands, where the tropical forest is interrupted by grassy prairies of considerable extent. In visiting these prairies he was delighted to find a species of "Bob-White" hitherto unknown (*O. godmani*). He afterwards met with the same bird a few miles

out of Coatzacoalcos, and it was seen a little further north in the open country about the shores of the beautiful lake of Catemaco.

5. Ortyx ridgwayi.

Colinus ridgwayi, Brewst. Auk, ii. p. 199[1]; iv. p. 159[2]; Stephens, Auk, ii. pp. 228, 231[3]; Bendire, Life Hist. N. Amer. Birds, p. 10[4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 107[5]; Nelson, Auk, xv. p. 121[6].

Ortyx ridgwayi, Grant, Cat. Birds Brit. Mus. xxii. p. 422[7]; Handb. Game-Birds, ii. p. 143[8].

Supra sicut in ceteris speciebus generis *Ortygis* coloratus et decoratus, sed subtus vinaceo tinctus et præcipue supercilio, facie laterali et gutture toto nigris distinguendus. Long. tota circa 7·5, alæ 4·7, caudæ 2·2, culm. 0·6, tarsi 1·15. (Descr. exempl. typ. ex Sonora. Mus. Brit.)

♀ vix a ♀ *O. pectoralis* distinguendus, sed, ut videtur, dorso minus irrorato, et magis distincte fulvo transfasciato distinguendus. Long. tota circa 8·0, alæ 4·8. (Descr. feminæ ex Mont. Barboquivori, Arizona. Mus. nostr.)

Hab. North America, Southern Arizona[4 7].—Mexico, Sonora (*Cahoon*[2]), Sasabe (*Stephens*[1]), Campos, Bacuachi (*Benson*[4]).

The Masked Colin is the first of the black-throated species on our list. It is found within a restricted area in Southern Arizona, extending into Sonora, where Mr. Nelson states it occurs at from 1000 to 2500 feet above the sea[6].

According to Mr. Brown, the present species cannot be said to be a mountain bird, as it inhabits the "mesas," or tablelands, in the valleys of Arizona, and possibly the foot-hills[4]. He states that its food consists of seeds, berries, and insects, as well as green leaves. The same observer records that this Colin, besides the usual note of "Bob-White," has a second call, frequently heard when the flock is scattered, and used as an assembly-signal. The nest is a shallow depression in the ground, and the eggs are white[4].

6. Ortyx insignis.

Colinus insignis, Nelson, Auk, xiv. p. 46[1]; xv. p. 122[2]; Grant, Ibis, 1902, p. 241[3].

O. ridgwayi similis, gutture tantum nigro, sed ubique saturatior, gastræo saturate castaneo, hypochondriis imis vix albido maculatis, et linea alba supraciliari distinguendus. Long. tota circa 7·5, caudæ 1·9, culm. 0·45, tarsi 1·0.

♀ *O. ridgwayi* ♀ similis, sed saturatior, et subtus nigro late et distincte transfasciatus. Long. tota circa 7·5, alæ 4·3. (Descr. maris et feminæ ex Chiapas. Mus. nostr.)

Hab. Mexico, Valley of Comitan, Chiapas (*Nelson*[2], *Richardson*), Cuilco (*Richardson*); Guatemala, Nenton (*Nelson & Goldman*[1]).

This black-throated species is very nearly allied to *O. ridgwayi*, but is darker and of a deeper chestnut beneath. The distinct white eyebrow is also another characteristic. The female, too, is much darker than that of *O. ridgwayi*, and the bars on the under surface are more complete and darker, but not to the same extent as in the female of *O. salvini*.

Messrs. Nelson and Goldman found the present species in the Valley of Comitan in Chiapas, whence it extended to the adjacent border of Western Guatemala, at a height of 3000 to 6000 feet [2]. Mr. Richardson has since obtained for us a full series of both sexes from Comitan and the Valley of Cuilco.

Nothing particular has been recorded of the habits of this bird.

7. Ortyx coyolcos.

Tetrao coyolcos, Müll. Syst. Nat., Suppl. p. 129 [1].

Ortyx coyolcos, Gould, Monogr. Odontoph. iii. t. 6 (right-hand fig.) [2]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 45 [3]; Sumichr. La Nat. v. p. 231 [4]; Grant, Cat. Birds Brit. Mus. xxii. p. 423 [5]; Handb. Game-Birds, ii. p. 144 [6].

Colinus coyolcos, Nelson, Auk, xv. p. 117, 121 [7].

O. ridgwayi similis, sed saturatior, gutture et præpectore toto nigris: rostro brunneo, mandibula pallidiore; pedibus pallide brunnescenti-griseis; iride brunnea. Long. tota circa 7·0, alæ 4·1, caudæ 1·9, culm. 0·55, tarsi 1 0. (Descr. maris adulti ex Tehuantepec. Mus. nostr.)

♀ vix a ♀ *O. ridgwayi* distinguenda, et notæo eodem modo transfasciato; præpectore tamen saturate ochraceo, nigro fasciato. Long. tota circa 7·5, alæ 4·45. (Descr. feminæ adultæ ex Tehuantepec. Mus. nostr.)

Hab. Mexico, Tehuantepec (*Sumichrast* [4], *Richardson* [5]), Juchitan [4 5], Tapana [3], Santa Efigenia [3 4], Cacoprieto [4] (*Sumichrast*), Tonala [4 7], Chiapas [7] (*Sumichrast*, *Nelson*).

Like *O. ridgwayi*, this species has the throat black; but it also differs in having the black extending over the front of the neck. A few tiny white spots are also visible above the eye, but no distinct eyebrow is present.

Mr. Nelson [7] gives the range as the Pacific coast of Oaxaca and Chiapas, from the city of Tehuantepec to Tonala, occurring from the sea-level to 3000 feet. Sumichrast found it common on all the plains on the western side of the Isthmus of Tehuantepec, where it is locally known as the "Codorniz." "Near Tehuantepec, the home of this 'Bob-White' is said to be on the partly wooded and partly grassy plains. Old fields and grassy prairies that extend irregularly amid the scrubby forests of that district are its favourite haunts. . . . . The Quails do not penetrate heavily-wooded bottoms along streams, where the moisture causes a vigorous tropical forest-growth, unless some farmer hews out a clearing for his cornfields." [7]

8. Ortyx atriceps.

Ortyx coyolcos, Gould (nec Müll.), Monogr. Odontoph. t. 6 (left-hand fig.) [1].

Ortyx atriceps, Grant, Cat. Birds Brit. Mus. xxii. p. 424 [2]; Handb. Game-Birds, ii. p. 144, t. 33 [3].

Colinus atriceps, Nelson, Auk, xv. p. 122 [4].

O. coyolcos similis, sed ubique saturatior, fronte et vertice antico nigerrimis, gastræo intense castaneo distinguendus. Long. tota circa 7·3, alæ 4·3, caudæ 2·0, culm. 0·6, tarsi 1·1.

♀ vix a ♀ *O. coyolcos* distinguendus, sed forsan saturatior, et fasciis gastræi nigris saturatioribus distinguendus. Long. tota circa 6·8, alæ 4·0. (Descr. maris et feminæ ex Putla. Mus. nostr.)

Hab. Mexico, Putla (*Rébouch* [2]).

The Black-headed Colin is at present known only from the specimens obtained by Rébouch at Putla *. It is a western form of *O. coyolcos*, and has a blacker head and darker chestnut under surface; the black on the throat, too, extends over the front of the neck.

9. Ortyx salvini.

Colinus salvini, Nelson, Auk, xiv. p. 45 [1]; xv. p. 122 [2]; Grant, Ibis, 1902, p. 241 [3].

O. atricipiti similis, sed multo saturatior et supra grisescentior nec rufo adumbratus; pileo undique cum gutture toto et pectore summo nigerrimis; pectore imo et abdomine sordide castaneis, plumis distincte nigro marginatis. Long. tota circa 7·8, alæ 3·8, caudæ 2·0, culm. 0·6, tarsi 1·15.

♀ *O. atricipiti* ♀ similis, sed supra nigricantior, et fasciis gastræi nigris latioribus et magis distincte indicatis distinguendus. Long. tota circa 7·8, alæ 4·0. (Descr. maris et feminæ ex San Benito, Chiapas. Mus. nostr.)

Hab. Mexico, Tapachula, Chiapas (*Nelson & Goldman* [1]), San Benito (*Nelson & Goldman* [1], *Richardson* [3]).

This is a distinct species, very dark in colour, and with an intensely black head, the black also covering the entire sides of the face and throat, and extending over the upper part of the breast, reaching lower down than in *O. coyolcos* and being quite as much developed as in *O. pectoralis*. The chestnut colour of the under surface is much duller than in the latter species, and the black edgings to the feathers give it a scaly appearance which is not seen in the allied forms. The strongly marked black bars on the breast of the female are also a feature of *O. salvini*.

Messrs. Nelson and Goldman discovered the present species in Chiapas, on the grassy coast-plains between Tapachula and San Benito, near the Guatemalan border; it was found from the sea-level up to 500 feet [2]. Mr. Richardson afterwards procured us a series from the neighbourhood of San Benito, on the Pacific coast.

The habits of this Colin resemble those of the other members of the genus.

CYRTONYX.

Cyrtonyx, Gould, Monogr. Odontoph. t. 7 (1844), Introd. p. 14 (1850); Grant, Cat. Birds Brit. Mus. xxii. p. 425 (1893).

In the Harlequin-Quails the sexes differ in plumage, and the crest is rather full, but none of the feathers are very elongate. The first flight-feather is intermediate in length between the seventh and eighth; the tail is less than half the length of the wing and composed of twelve feathers.

The three species recognized are all found within our limits.

* There are two places of this name in Mexico: one in Oaxaca, which is probably the locality intended; the other in the Distrito Federal, near Calimaya.

1. Cyrtonyx montezumæ.

Ortyx montezumæ, Vigors, Zool. Journ. v. p. 275 [1].

Cyrtonyx montezumæ, Stejn. Auk, ii. p. 46 [2]; Herrera, La Nat. (2) i. pp. 185, 327 [3]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 790 [4]; Allen, Bull. Am. Mus. N. H. v. p. 33 [5]; Grant, Cat. Birds Brit. Mus. xxii. p. 425 [6]; Handb. Game-Birds, ii. p. 146 [7]; Ibis, 1902, p. 241 [8]; Bendire, Life Hist. N. Amer. Birds, p. 35, t. 1. fig. 15 [9]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 110 [10]; Nelson, Auk, xix. t. 15. fig. 2 [11].

Ortyx massena, Less. Cent. Zool. p. 189 [12]; Ill. Zool. t. 52 [13]; Finsch, Abh. nat. Ver. Bremen, 1870, p. 357 [14].

Cyrtonyx massena, Gould, Monogr. Odontoph. t. 7 [15]; Scl. P. Z. S. 1858, p. 305 [16]; Lawr. Mem. Bost. Soc. N. H. ii. p. 306 [17]; Sumichr. La Nat. v. p. 230 [18].

Tetrao guttata, La Llave, Reg. Trim. i. p. 144 [19]; La Nat. Mex. vii., App. p. 65 [20].

Odontophorus meleagris, Wagl. Isis, 1832, p. 278 [21].

Cyrtonyx montezumæ mearnsi, Nelson, Auk, xvii. p. 255 [22]; xix. p. 390, t. 15. fig. 1 [23]; Grant, Ibis, 1903, p. 111 [24].

Vinaceo-rufus, nigro transversim fasciatus, et striis albis vel fulvescenti-albis nigro limbatis longitudinaliter striatus, cervicis postici plumis striis irregularibus potius sagittiformibus ornatis; tectricibus alarum secundariisque posticis cinereis nigro maculatim conspicue fasciatis, primariis et secundariis reliquis brunneis, extus albo indentatis vel maculatis; supracaudalibus rectricibusque cinereis nigro maculatim transfasciatis, et medialiter fulvo striolatis; pileo vinaceo, nigro maculato, rhachidibus fulvis; nucha cristata, vinaceo-rufa; supercilio et capitis lateribus cum regione oculari albis; loris et fascia suboculari usque ad regionem paroticam producta schistaceo-plumbeis; collo laterali antico genisque albis, illo nigro postice marginato; collo laterali postico cinerascenti-brunneo; gula nigra, torque gutturali albo; præpectore et pectore medio saturate castaneis; præpectoris et corporis subtus lateribus nigris, albo pulchre ocellatis; abdomine, crisso et subcaudalibus nigris; subalaribus cineraceis, albo fasciatim maculatis; remigibus intus cineraceis. Long. tota circa 8·0, alæ 5·0, caudæ 1·75, culm. 0·65, tarsi 1·2. (Descr. maris adulti ex Cañada, Chihuahua. Mus. nostr.)

♀ supra mari similis, sed minus distincte nigro transfasciatus, nigro tamen maculatim notato; pileo brunneo nigro maculato, crista nuchali arenaria, maculis nigris ornata; supercilio lato et facie laterali cervinis, nigro striolatis vel transfasciatis; regione oculari et colli lateribus albis, sparsim nigro maculatis; macula parotica nigra; genis gulaque albidis; linea malari minute nigro notata; corpore reliquo subtus vinaceo-rufo, nigro plus minusve celatim notato; corpore laterali maculis sagittiformibus nigris, medialiter vinaceo-fulvis ornato; plumis gutturalibus imis nigro fasciatim terminatis ad fasciam nigram colli lateralis conjunctis; abdomine isabellino, plumis nigro basaliter marmoratis; subcaudalibus vinaceo-rufis, nigro maculatis; alis intus cineraceis, subalaribus albo maculatis, et primariorum pogonio externo albo quadratim regulariter notato. Long. tota circa 7·3, alæ 4·6. (Descr. feminæ adultæ ex Puebla. Mus. Brit.)

Hab. North America, Arizona [6 10], South-western Texas [6 10].—Mexico [1 6 10 13 17 18 19], Los Pintos, Sonora, Los Vengos, Nacori, and Huerachi (*Robinette* [5]), Yecoera, Sonora, Jesus Maria, Cañada, and near Choix, Sinaloa (*Lloyd* [6]), Chihuahua (*Buchan-Hepburn* [6]), Sierra Madre above Ciudad Victoria, Tamaulipas, Sierra Madre, Tepic (*Richardson* [6]), Guadalajara (*Jouy* [4], *Grayson* [14 17]), Valley of Mexico (*Herrera* [3]), city of Mexico (*Sumichrast* [6 18]), Puebla (*Rébouch* [6]), La Parada (*Boucard* [16]).

This beautiful Quail inhabits Western Texas and Arizona, whence it extends over the tablelands as far south as the city of Mexico. Mr. Nelson recognizes more than one race, and he considers that the bird from S.W. Texas, Arizona, and New Mexico

belongs to a paler and large-spotted form, *C. montezumæ mearnsi*, which ranges into Northern Mexico. We notice that birds from different localities vary somewhat in the colour of their plumage, some being darker than others, some greyer on the sides of the body and not so black. In no case, however, do we find these forms sufficiently pronounced to deserve a separate name, and they do not seem to have defined areas of distribution, as we have seen in the British Museum a large-spotted bird from Puebla which was indistinguishable from Texan examples.

Mr. John Swinburne, writing to Bendire [9] from Arizona, says that this Quail lies very close at all times, and will almost allow itself to be trodden upon before it moves. Even the adult, he remarks, "seems very stupid when suddenly flushed, and, after flying a short distance, alights and attempts to hide in most conspicuous places. I have seen men follow and kill them by throwing stones." In Arizona the species is found at a height of from 7000 to 9000 feet during the breeding-season, frequenting the thick live-oak scrub and the patches of rank grass; in winter it descends to lower levels.

The nest is a hollow in the ground under some tuft of long grass, and is somewhat carefully lined. The eggs, from eight to ten in number, are white.

2. Cyrtonyx sallæi.

Cyrtonyx sallei, Verr. in Thomson's Arcana Nat. i. p. 35, t. 4 [1].

Cyrtonyx sallæi, Salv. & Godm. Ibis, 1889, p. 242 [2]; Grant, Cat. Birds Brit. Mus. xxii. p. 427 [3]; Handb. Game-Birds, ii. p. 148 [4]; Ibis, 1902, p. 242 [5]; 1903, p. 111 [6].

Cyrtonyx merriami, Nelson, Auk, xiv. p. 48 [7].

? *Cyrtonyx merriami*, Nelson, Auk, xix. p. 391, t. 15. fig. 3 [8].

C. montezumæ similis, sed supra grisescentior, fasciis nigris angustioribus et dorsi striis longitudinalibus rufescentibus nec albidis; gula nigra, torque gutturali et genis albis circumdata; gutture imo, præpectore et pectore toto castaneis; corporis lateribus totis schistaceo-cinereis, albo ocellatis, hypochondriis imis rufo ocellatis; abdomine imo et subcaudalibus nigris; alis intus cineraceis. Long. tota circa 8·5, alæ 5·2, culm. 0·7, tarsi 1·1. (Descr. maris adulti ex Amula. Mus. nostr.)

♀ adhuc ignota.

Hab. Mexico [1 3], Amula, Guerrero (*Mrs. H. H. Smith* [2 3]), Volcan de Orizaba, Vera Cruz (*Nelson & Goldman* [6]).

Sallé's Harlequin-Quail is still a very rare bird in museums, and we have seen but few specimens. It is easily distinguished from *C. montezumæ* by its lighter chestnut under surface, and by the sides of the body being light slaty-grey, spotted with white. The chief character, however, is the buff and chestnut spotting of the flanks, which is one of the features of *C. merriami* from Orizaba [7]. We have, therefore, little doubt that Mr. Ogilvie Grant is right in uniting the latter with *C. sallæi*.

In his recent paper (*cf.* Auk, 1902, description of tab. xv.) Mr. Nelson again upholds the distinctness of *C. merriami* and gives a figure of the type. His description does not agree with his original diagnosis, and the bird redescribed and figured appears to be a small spotted form of *C. montezumæ*.

3. Cyrtonyx ocellatus.

Ortyx ocellatus, Gould, P. Z. S. 1836, p. 75 [1].

Cyrtonyx ocellatus, Gould, Monogr. Odontoph. t. 8 [2]; Scl. & Salv. Ibis, 1859, p. 226 [3]; Salv. Cat. Strickl. Coll. p. 573 [4]; Grant, Cat. Birds Brit. Mus. xxii. p. 428 [5]; Handb. Game-Birds, ii. p. 149 [6].

Cyrtonyx sumichrasti, Lawr. Ann. N. Y. Ac. Sci. i. p. 51 [7]; Sumichr. La Nat. v. p. 230 [8].

C. sallæi similis, sed nucha cristata sordide cineracea, notæi striis longitudinalibus rufis, præpectore medio ochraceo, plumis castaneo marginatis, hujus lateribus cinereis ochraceo ocellatis; corpore reliquo subtus læte castaneo, corporis lateribus castaneis, nigro vel schistaceo sparsim transfasciatis; abdomine nigro. Long. tota circa 8·5, alæ 5·35, caudæ 1·75, culm. 0·65, tarsi 1·25. (Descr. maris adulti ex Quezaltenango. Mus. nostr.)

♀ *C. montezumæ* ♀ similis, sed saturatior, et nucha saturate vinacea, nigro fasciata. Long. tota circa 7·5, alæ 4·9. (Descr. feminæ adultæ ex Guatemala. Mus. Brit.)

Hab. Mexico, Santa Efigenia, Tehuantepec (*Sumichrast* [7 8]); Guatemala [2 5] (*Constancia* [4]), Quezaltenango and Dueñas (*O. S.*[5]), Toliman 5000 feet (*Richardson* [5]); Honduras, Danli, Jalapa, near the frontier (*Richardson*).

The Ocellated Quail differs from *C. sallæi*, which it resembles in the absence of the white ocellated spots on the flanks, by several well-marked characters. In the facial markings the two species are alike, but *C. ocellatus* has the black crescent on the sides of the neck continued below the white band on the lower throat. Instead of the white ovate spots which decorate the grey sides of the chest in *C. sallæi*, the spots in *C. ocellatus* are pale ochraceous and take the form of broad bars. The feathers of the centre of the front of the neck and chest are pale ochreous, with chestnut bars at the ends, and the under surface generally is lighter chestnut than in *C. sallæi*. The sides of the body likewise are bright chestnut, with a few black bars and scarcely any slaty-grey, this latter colour being represented by a few remains of bars near the ends of the feathers, which are chestnut and not grey with chestnut spots, as in *C. sallæi*. The female scarcely differs from that of *C. montezumæ*, but is rather larger and darker, and has the nuchal patch dark brown with black bars.

The range of this species appears to be from Tehuantepec to Guatemala, and the adjacent part of Honduras, whence Richardson sent us some specimens from his last expedition.

Nothing has been recorded of its habits.

DACTYLORTYX.

Dactylortyx, Grant, Cat. Birds Brit. Mus. xxii. p. 429 (1893).

This genus is characterized by having the plumage of the sexes different, a short crest, the first flight-feather equal to the eighth, the tail two-fifths of the length of the wing and composed of twelve feathers, and the claws very long and but slightly curved.

Only one species is recognized.

1. Dactylortyx thoracicus.

Ortyx thoracicus, Gambel, Pr. Ac. Philad. iv. p. 77 [1].

Odontophorus thoracicus, Scl. P. Z. S. 1856, p. 310 [2]; 1859, p. 369 [3]; Salv. & Scl. Ibis, 1860, p. 276 [4].

Dactylortyx thoracicus, Grant, Cat. Birds Brit. Mus. xxii. p. 429 [5]; Handb. Game-Birds, ii. p. 150 [6]; Ibis, 1902, p. 242 [7]; Nelson, Pr. Biol. Soc. Washington, xii. pp. 64, 65 [8].

Odontophorus lineolatus, Gould, Monogr. Odontoph. t. 32 [9]; Boucard, P. Z. S. 1883, p. 460 [10].

Dactylortyx thoracicus lineolatus, Nelson, loc. cit. pp. 64, 66 [11].

Dactylortyx chiapensis, Nelson, loc. cit. pp. 64, 66 [12].

Dactylortyx devius, Nelson, loc. cit. pp. 65, 68 [13].

♀ pileo brunneo, vertice cristato paullo nigro notato, nucha et collo postico et laterali rufescentibus, plumis nonnullis medialiter ochraceo nigro-marginato sagittatim notatis; interscapulio brunnescentiore; dorso et supracaudalibus magis olivaceo-brunneis, nigro plus minusve distincte fasciatis vel maculatis et fusco minutissime irroratis; scapularibus et tectricibus alarum maculis vel fasciis magnis velutino-nigris ornatis et medialiter ochraceo fulvo striolatis, striis apicem versus triangulatim paullo spatulatis; remigibus et rectricibus sepiariis, extus paullo ochraceo variegatis; secundariis intimis intus late ochraceo marginatis; loris, supercilio et facie laterali schistaceo-cinereis; regione parotica saturate brunnea; fascia superciliari ad fasciam ochraceo maculatam infra nigram ad colli latera positam producta; gula alba; colli lateribus et corpore reliquo subtus castaneis, pectore medio pallidiore rufo et maculis paucis nigris plus minusve celatis variis; plumis plerisque et præcipue hypochondriis stria mediana fulva ornatis; abdomine albido; hypochondriis imis fulvescentibus, subcaudalibus rufis, omnibus nigro vel fusco fasciatis; ala infra cinerascente. Long. tota circa 8·0, alæ 5·2, caudæ 1·65, culm. 0·65, tarsi 1·35. (Descr. feminæ adultæ ex Hacienda de los Atlixcos. Mus. nostr.)

♂ *ad.* ♀ similis, sed scapularibus et tectricibus alarum clarius griseo adumbratis et latius albo striatis, gutture et facie laterali cum supercilio lato aurantiaco-rufis; gutture imo et corpore reliquo subtus cineraceo-brunneis, plumis distincte albo medialiter striatis; hypochondriis imis et subcaudalibus ochraceo-fulvis, nigro basaliter maculatis. Long. tota circa 9·0, alæ 5·2. (Descr. maris adulti ex Volcan de Fuego. Mus. nostr.)

Hab. Mexico [5 9], Hacienda de Los Atlixcos (*F. D. G.* [5]), Cordova (*Sallé* [2 5]), Jalapa (*Pease* [1], *De Oca* [3]), Sierra Madre del Sur, Omilteme 8000 feet, Atoyac (*H. H. Smith* [5]), Santa Efigenia, Tehuantepec (*Sumichrast* [11]), forests of San Sebastian, Western Jalisco [13], San Cristobal, Chiapas [12] (*Nelson & Goldman*), Tizimin and Peto, Yucatan (*Gaumer* [5 10]); Guatemala [5], Santa Maria (*Nelson & Goldman* [11]), Volcan de Fuego [4], Quezaltenango and Dueñas [5] (*O. S.*); Salvador, Volcan de San Miguel (*Richardson* [5]).

Mr. Nelson recognizes four races of *Dactylortyx thoracicus*, as follows:—true *D. thoracicus* (Gambel), from the mountains of Eastern Mexico; *D. thoracicus lineolatus* (Gould), from the mountains of South-western Oaxaca and the adjacent part of Chiapas; *D. chiapensis*, from San Cristobal, Chiapas, and the Volcan de Santa Maria, Guatemala; and, lastly, *D. devius*, from the forests of Jalisco, and probably other parts of Western Mexico.

There is a certain amount of variation observable in the colour of the breast, both in males and females, and also in the width of the light shaft-streaks on the under surface. We have a good series of skins from Guatemala, but our Mexican material

is not sufficient to enable us to pass judgment on Mr. Nelson's subspecies. Mr. Grant, however, is confident that they cannot be upheld. The birds from Yucatan, which are smaller and lighter in colour, and have a whiter breast and abdomen, are perhaps the most widely different.

This is a true forest-bird, frequenting the edges of ravines on the mountain-sides, where it loves to bask in open sunny spots, and is generally met with in small coveys of from six to eight. Salvin found this species one of the commonest Quails on the Volcan de Fuego in Guatemala. He states [4] that unless approached quite suddenly it refuses to take wing, preferring to escape by running, and consequently most of the specimens obtained by him were shot on the ground. They sit remarkably close, even when approached within a few feet, trusting to the colour of their plumage for protection. Gaumer [10] found *D. thoracicus* equally common in all the eastern forests of Yucatan, where it is much esteemed as an article of food. At nightfall the bird utters a plaintive call, beginning with three low whistles.

ODONTOPHORUS.

Odontophorus, Vieillot, Analyse, p. 51 (1816); Grant, Cat. Birds Brit. Mus. xxii. p. 430 (1893).

The Thick-billed Quails have the sexes similar or slightly different in plumage, a moderately long and full crest, the first flight-feather shorter than the tenth, the tail not more than half the length of the wing and composed of twelve feathers, and the claws normal.

Of the sixteen species known, five occur within our limits, and the rest are confined to various parts of South America.

1. Odontophorus marmoratus.

Ortyx (Odontophorus) marmoratus, Gould, P. Z. S. 1843, p. 107 [1].

Odontophorus marmoratus, Scl. & Salv. P. Z. S. 1864, p. 371 [2]; Salv. P. Z. S. 1870, p. 218 [3]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 128 [4]; Grant, Cat. Birds Brit. Mus. xxii. p. 433 [5]; Handb. Game-Birds, ii. p. 153 [6]; Ibis, 1902, p. 243 [7].

Odontophorus guianensis, Lawr. (nec Gmel.), Ann. Lyc. N. Y. vii. p. 301 [8].

Odontophorus castigatus, Bangs, Auk, xviii. p. 356 [9].

♂ feminæ similis, sed collo postico et interscapulio magis cinereis, nigro transvermiculatis et albo minute punctatis; dorso postico pallidiore, ochracescenti-brunneo, minute nigro notato, uropygio et supracaudalibus rufescentioribus; gastræi fasciis lætioribus, ochracescenti-fulvis. Long. tota circa 9·0, alæ 5·4. (Descr. maris adulti ex Chepo. Mus. nostr.)

♀. Supra brunneus, nigro et arenario minutissime vermiculatus; scapularibus et secundariis intimis maculis nigris majoribus notatis, his intus ad apicem ochraceis; dorso postico, uropygio et supracaudalibus pallidioribus, vix olivaceo-brunneis, minute nigro punctulatis; alis brunneis, tectricibus arenario vermiculatim fasciatis et minute albo punctulatis; remigibus et rectricibus sepiariis, arenario fasciolatis; pileo cristato saturate brunneo, vix rufo lavato, nucham versus nigricante; loris et facie laterali cum mento summo sordide castaneo-brunneis; gutture fuscescenti-brunneo; corpore reliquo subtus brunneo, fasciis arenariis nigro marginatis maculatim ornato. Long. tota circa 9·0, alæ 5·5, caudæ 2·1, culm. 0·7, tarsi 1·55. (Descr. feminæ adultæ ex Bugaba. Mus. nostr.)

Hab. Costa Rica, Las Trojas, Pozo Azul de Pirris (*Zeledon* [4]); Panama [2 8], Chiriqui (*Bangs* [9]), Bugaba, Chepo (*Arcé* [3 5]), Lion Hill (*M'Leannan* [5]).—Western South America southwards to Bolivia [5].

The Marbled Quail was first described by Gould from specimens obtained at Santa Fé de Bogotá. It is very closely allied to *O. guianensis*, some examples examined, especially one from Lion Hill, Panama, approaching that species very closely. Mr. Bangs [9] is of opinion that the Chiriqui bird, which he says is darker, should be separated from true *O. marmoratus*, and has named it *O. castigatus*. The species appears to frequent the forests, and was met with by Tschudi in the Andes of Peru at elevations of from 4000 to 7000 feet. Its habits are unknown.

2. **Odontophorus melanotis.** (Tab. LXXIII.)

Odontophorus melanotis, Salv. P. Z. S. 1864, p. 586 [1]; 1867, p. 161 [2]; Ibis, 1872, pp. 313, 323 [3]; v. Frantz. J. f. Orn. 1869, p. 374 [4]; Zeledon, Pr. U. S. Nat. Mus. viii. p. 112 [5]; An. Mus. Nac. Costa Rica, 1887, p. 128 [6]; Richm. Pr. U. S. Nat. Mus. xvi. p. 524 [7]; Grant, Cat. Birds Brit. Mus. xxii. p. 435 [8]; Handb. Game-Birds, ii. p. 155 [9]; Underwood, Ibis, 1896, p. 449 [10].

Supra saturate brunneus, nigro obscure vermiculatus, scapularibus et secundariis intimis nigro maculatis, his quoque ochraceo intus maculatis; tectricibus alarum paullo pallidioribus, striis parvis albis maculatis; remigibus sepiariis, primariis extus rufo indentatis, secundariis fulvo vermiculatim irroratis; pileo et corpore subtus toto saturate vinaceo-castaneis; facie laterali et gula nigris; crissi lateribus et subcaudalibus brunneis, arenario nigroque vermiculatis; alis intus cinerascenti-brunneis. Long. tota circa 8·5, alæ 5·6, caudæ 2·1, culm. 0·75, tarsi 1·7. (Descr. avis typicæ ex Tucurriqui. Mus. nostr.)

Hab. Nicaragua, Chontales (*Belt* [3 8]), Rio Escondido (*Richmond* [7]); Costa Rica (*Arcé* [8], *Zeledon* [5]), Tucurriqui (*Arcé* [1 8]), Dota, Candelaria (*v. Frantzius* [4]), Miravalles (*Underwood* [10]), Jiménez (*Zeledon* [6]); Panama, Santiago, Veraguas (*Arcé* [2 8]).

The chestnut crown and under surface of the body distinguish this species, the black face and throat being also conspicuous features. The type specimen from Tucurriqui, Costa Rica, is probably a female, as it agrees with a bird of this sex obtained by Mr. Underwood at Miravalles. A male from Veraguas sent by Arcé has the crown of a somewhat paler chestnut colour, and the mantle of a more uniform dark olive-brown, not showing the fine vermiculations of the Costa Rican female, while the light spots at the end of the inner webs of the inner secondaries are not visible.

Very little is known respecting the habits of the Black-eared Quail. Like its allies, this species inhabits the forest. Mr. Richmond [7] met with a flock of rather more than a dozen on the Rio Escondido, and when flushed they took refuge in the branches of the trees, afterwards flying off into the forest two or three at a time. Mr. Underwood obtained a single specimen at Miravalles [10], but no more were seen, and it appears to be a scarce bird.

3. **Odontophorus leucolæmus.** (Tab. LXXIV.)

Odontophorus leucolæmus, Salv. P. Z. S. 1867, p. 161[1]; 1870, p. 217[2]; Lawr. Ann. Lyc. N. York, ix. p. 140[3]; v. Frantz. J. f. Orn. 1869, p. 374[4]; Zeledon, Pr. U. S. Nat. Mus. viii. p. 112[5]; An. Mus. Nac. Costa Rica, 1887, p. 128[6]; Grant, Cat. Birds Brit. Mus. xxii. p. 438[7]; Handb. Game-Birds, ii. p. 158[8].

Supra saturate chocolatinus, plumis obsolete fulvo irroratis; scapularibus maculis nigris rufo sagittatim fasciatis obscure notatis; alis dorso concoloribus, remigibus sepiariis, secundariis extus rufo paullo vermiculatis; cauda nigricante; fronte cum loris et regione parotica nigris; gula alba; gutture imo et pectore summo nigris, hoc fasciis celatis albis ornato; corpore reliquo subtus sordide castaneo, pectore medio nigricante; abdomine nigricante, vix rufo lavato; alis intus fusco-brunneis. Long. tota circa 7·5, alæ 5·0, caudæ 1·9, culm. 0·75, tarsi 1·5. (Descr. feminæ typ. ex Cordillera de Tolé. Mus. nostr.)

♀ mari similis, sed ubique saturatior, et pectore medio et abdomine nigerrimis, corporis lateribus brunneis, fulvo obscure variegatis. Long. tota circa 8·5, alæ 5·1. (Descr. maris adulti ex Azahar de Cartago. Mus. nostr.)

Hab. Costa Rica[5], Naranjo de Cartago (*Zeledon*[6]), Dota, Candelaria (*v. Frantzius*[4], *Carmiol*[7]), San José (*Cooper*[3]); Panama, Cordillera de Tolé[1], Calovevora[2], Chitra, Veraguas (*Arcé*[2 7]).

This Quail is remarkable for its dark coloration, black head, neck, and chest, against which the white throat stands out in bold relief, but the amount of white on the throat varies considerably, sometimes reaching up to the chin, but in other specimens the chin and sides of the throat are black. The half-concealed white spots on the black breast also vary considerably in extent, these being scarcely visible in some examples, while in others they are very broad and numerous. There is likewise a considerable difference in the colour of the sides of the body and flanks, which are orange, freckled with black spots and vermiculations: in the type these parts are very dark rufescent brown, with very slight blackish vermiculations. This variation in colour and markings is not due to locality, but may depend upon the age of the bird.

4. **Odontophorus guttatus.**

Ortyx guttata, Gould, P. Z. S. 1837, p. 79[1].

Odontophorus guttatus, Gould, Monogr. Odontoph. t. 28[2]; Scl. P. Z. S. 1856, p. 309[3]; 1859, p. 391[4]; Scl. & Salv. Ibis, 1859, p. 226*[5]; Lawr. Ann. Lyc. N. York, ix. p. 140[6]; v. Frantz. J. f. Orn. 1869, p. 374[7]; Salv. P. Z. S. 1870, p. 218[8]; Sumichr. La Nat. ii. p. 37[9]; Boucard, P. Z. S. 1878, p. 42[10]; Zeledon, Pr. U. S. Nat. Mus. viii. p. 112[11]; An. Mus. Nac. Costa Rica, 1887, p. 128[12]; Grant, Cat. Birds Brit. Mus. xxii. p 439[13]; Handb. Game-Birds, ii. p. 159[14]; Ibis, 1902, p. 244[15].

Odontophorus consobrinus, Ridgw. Pr. U. S. Nat. Mus. xvi. p. 469[16].

Supra brunneus, fusco vermiculatim irroratus, interscapulio et secundariis intimis maculis magnis quadratis nigris ornatis, pallide castaneo circumlineatis, his quoque intus apicem versus macula magna ochracea instructis; interscapulio paullo cinerascentiore, et lineolis albidis angustis ornato; dorso postico, uropygio

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* The locality "Coban palm-ridges" is a misprint: it should be "Cahoon palm-ridges" (*i. e.* of Honduras).

et supracaudalibus magis ochracescenti-brunneis et nigro vermiculatis; alis dorso concoloribus et eodem modo marmoratis vel maculatis; remigibus sepiariis, secundariis arenario indentatis et variegatis; rectricibus nigricantibus ochraceo irregulariter vermiculatis; pileo antico et cristæ plumis brunneis, pileo postico celatim aurantiaco; facie laterali et nuchæ lateribus saturate castaneis; genis et gula nigris, albo lineatis; corpore reliquo subtus olivascenti-brunneo, præpectore minute, pectore autem largius, maculis ovatis albis nigro circumdatis ornatis; hypochondriis imis et subcaudalibus vix rufescentioribus, nigro transfasciatis; alis intus cineraceis. Long. tota circa 10·0, alæ 6·0, caudæ 2·35, culm. 0·8, tarsi 1·5. (Descr. maris adulti ex Tehuantepec. Mus. nostr.)

♀ mari similis, sed crista brunnea, minime aurantiaca. Long. tota circa 9·0, alæ 5·8. (Descr. feminæ adultæ ex San Rafael del Norte. Mus. nostr.)

Hab. Mexico [13], Vera Cruz (*Sumichrast* [9]), Cordova (*Sallé* [3 13]), Mirador (*Sartorius* [16]), Teotalcingo, Oaxaca (*Boucard* [4]), Chimalapa, Tehuantepec (*Richardson* [13]), Yucatan (*Dyson* [5]); British Honduras [13], Rio Hondo (*Dyson* [2]), San Felipe, Belize (*Blancaneaux* [13]), Bay of Honduras (*Barlow* [1]); Guatemala, Vera Paz, Dueñas, Volcan de Fuego 5500 feet, Volcan de Agua (*O. S.* [13]); Nicaragua, Jali, San Rafael del Norte (*Richardson*); Costa Rica [11 13], Barranca (*Carmiol* [13]), Dota, Candelaria (*Carmiol* [7], *v. Frantzius* [7]), San José (*Boucard* [10]), Sarchi and El Zarcero de Alajuela (*Zeledon* [12]), Irazu (*Underwood*); Panama, Volcan de Chiriqui (*Arcé* [8 13]).

O. guttatus belongs to the section of the genus in which the species have ocellated white spots below; it is nearly allied to *O. veraguensis*, and in Costa Rica, where their range overlaps, somewhat intermediate forms occur, these having the underparts more or less washed with rufous. We find nothing worth recording as to the habits of this bird.

5. Odontophorus veraguensis.

Odontophorus veraguensis, Gould, P. Z. S. 1856, p. 107 [1]; Scl. P. Z. S. 1856, p. 143 [2]; Salv. P. Z. S. 1867, p. 161 [3]; Lawr. Ann. Lyc. N. York, ix. p. 140 [4]; v. Frantz. J. f. Orn. 1869, p. 374 [5]; Zeledon, Pr. U. S. Nat. Mus. viii. p. 112 [6]; An. Mus. Nac. Costa Rica, 1887, p. 128 [7]; Grant, Cat. Birds Brit. Mus. xxii. p. 441 [8]; Handb. Game-Birds, ii. p. 160 [9].

O. guttato similis, sed pileo cinnamomeo et gastræo rufescente albo ocellato distinguendus. Long. tota circa 8·5, alæ 5·7, caudæ 1·85, culm. 0·7, tarsi 1·5. (Descr. avis adulti ex Chiriqui. Mus. nostr.)

Hab. Costa Rica, Dota (*Zeledon* [6], *Carmiol* [4 8], *v. Frantzius* [5]), Barranca (*Carmiol* [4]), Las Cruces de Candelaria (*Zeledon* [4 7]); Panama (*Seemann* [1 3]), Boquete [2], near David [1 3] (*Bridges*), southern slopes of the Volcan de Chiriqui (*Arcé* [8]).

This species is closely allied to *O. guttatus*, from which it is readily distinguished by having the top of the head ferruginous and the underparts washed with reddish-chestnut. No notes on its habits have been published, beyond the fact that at Boquete, on the slope of the Volcan de Chiriqui, Bridges [2] met with it running on the ground, in coveys, in the forests, and remarks that the male has a peculiar call-cry. The specific name is an unfortunate one, the bird not having been actually found as yet in Veragua, David being in Chiriqui and far from the department of Veragua.

RHYNCHORTYX.

Rhynchortyx, Grant, Cat. Birds Brit. Mus. xxii. p. 443 (1893).

In the genus *Rhynchortyx* there is no distinct crest, the first flight-feather is intermediate in length between the eighth and ninth, the tail is less than half the length of the wing and composed of ten feathers, and the tarsus is *longer* than the middle toe and claw. In all the other genera of Partridges and Quails previously mentioned the reverse obtains, the tarsus being shorter than the middle toe and claw. The sex has not been ascertained of any of the specimens recorded.

Two species have been described, both of which occur within our limits.

1. **Rhynchortyx spodiostethus.** (*Odontophorus spodiostethus*, Tab. LXXVI.)

Odontophorus spodiostethus, Salv. Ibis, 1878, p. 447 [1]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 524 [2].

Rhynchortyx spodiostethus, Grant, Cat. Birds Brit. Mus. xxii. p. 443 [3]; Handb. Game-Birds, ii. p. 162. t. 34 [4].

Supra castaneo-brunneus, interscapulio cinereo lavato; dorso postico magis cinerascenti-brunneo, maculis paucis sagittiformibus ornato; scapularibus et secundariis intimis nigro conspicue maculatis, rufo fasciatis, his intus et ad apicem arenario limbatis vel indentatis; tectricibus alarum cineraceo fasciatim vermiculatis et maculis magnis nigris ornatis; remigibus sepiariis, secundariis rufo indentatis; rectricibus rufescenti-brunneis, rufo nigroque transfasciatis; pileo rufescenti-brunneo; loris, supercilio lato, facie laterali et gula læte castaneis, regione parotica summa nigricante; gutture imo, præpectore et pectoris lateribus schistaceis, pectore reliquo saturate ochraceo, abdomine medio albo; subcaudalibus et hypochondriis imis ochraceis nigro fasciatis; ala intus sepiaria, subalaribus marginalibus nigris. Long. tota circa 7·0, alæ 4·4, caudæ 1·55, culm. 0·65, tarsi 1·35. (Descr. exempl. typ. ex Veragua. Mus. nostr.)

Hab. NICARAGUA, Rio Escondido (*Richmond* [2]), Ojoche (*Richardson*); PANAMA [2], Veragua (*Arcé* [1 3]), Agua Dulce (*Mus. Brit., ex coll. Gould* [3]).

This prettily marked Colin was described from Veragua by Salvin. Mr. Richmond procured it on the Escondido River, and we have more recently received from Mr. Richardson a specimen from Ojoche, Nicaragua. Compared with the type, the Nicaraguan examples show some notable differences. The chestnut colour of the sides of the face is lighter and more orange, and that of the lower part of the back and rump is different, being of a light olive-brown, instead of greyish- or vinous-brown. It would, however, be imprudent to describe the Nicaraguan and Panama birds as belonging to separate species, without a larger series of specimens: the variation in colour may be due to age, but we do not think this is likely.

2. **Rhynchortyx cinctus.** (*Odontophorus cinctus*, Tab. LXXV.)

Odontophorus cinctus, Salv. Ibis, 1876, p. 379 [1]; Rowley, Orn. Misc. iii. p. 39, t. 86 [2].

Rhynchortyx cinctus, Grant, Cat. Birds Brit. Mus. xxii. p. 444 [3]; Handb. Game-Birds, ii. p. 162 [4].

R. spodiostetho similis, et supra eodem modo perdicario coloratus, sed gutture et supercilio albis, facie laterali olivaceo-brunnea, præpectore et pectore rufo-brunneis minime cinereis, pectore medio et abdomine laterali albis, nigro transfasciatis, facile distinguendus. Long. tota circa 7·0, alæ 4·7, caudæ 1·5, culm. 0·65, tarsi 1·05. (Descr. exempl. typ. ex Veragua. Mus. nostr.)

Hab. PANAMA, Veragua (*Arcé* [1 3]).

R. cinctus is perhaps a rarer bird than the last, being known only from the types procured by Arcé. The two forms may eventually prove to be male and female of the same species.

Order GERANOMORPHÆ*.

Following the arrangement proposed by Huxley in 1867, we include in this Order the schizognathous birds ordinarily known as Rails and Cranes. The characters, chiefly osteological, are given by him as follows (*cf.* P. Z. S. 1867, p. 457):—"The rostrum is relatively stronger than in the Charadriomorphæ, and may even be short and arched; basypterygoid processes are absent (except in *Grus antigone*); the maxillo-palatines are concavo-convex or lamellar; the angle of the mandible is truncated; the sternum in the typical groups is comparatively narrow and elongated, and may be deeply notched or entire; the feet vary greatly, but the toes are never completely or even extensively webbed; and the ratio of the phalanges is as in the Charadriomorphæ; a greater or less space above the suffrago is devoid of feathers, but there appears to be nothing characteristic about the pterylosis of this group."

Since Huxley wrote, many additional characters have been put forward by Sclater, Lydekker, Seebohm, Sharpe, and others, and, as a result, two distinct groups, Fulicariæ and Alectorides, are recognized by the last-named naturalist in the 'Catalogue of Birds,' corresponding to the Ralliformes and Gruiformes of his later 'Classification.' We recognize, therefore, two Suborders—the Fulicariæ and the Alectorides—as adopted in the 'Nomenclator Avium Neotropicalium.'

Suborder FULICARIÆ.

Among the many osteological characters given by Mr. Lydekker for this Suborder ('Catalogue of Fossil Birds,' pp. 143, 144), the following are of particular importance. He describes the Fulicariæ as "schizognathous" birds, having the angle of the mandible truncated, the coracoid with a large subclavicular process, and the delto-pectoral crest and facet for the pectoralis minor in the humerus normal; there is no ectepicondylar process on the humerus, and in this respect it resembles that of the Alectorides.

The Rails, which are the principal representatives of the Fulicariæ, have holorhinal nostrils, and a single notch on each side of the posterior margin of the sternum. In outward appearance they are chiefly remarkable for their slender and compressed bodies, adapted for threading their way in the swamps and reed-beds which most of them frequent. Representatives of this suborder are found in the New World, amongst which the Fin-foots (*Heliornis*) are perhaps the most peculiar of the Neotropical forms.

* I have to acknowledge Dr. R. B. Sharpe's assistance with the Rails and the rest of the birds to be dealt with in this volume.—F. D. G.

Fam. RALLIDÆ.

The Rallidæ may be divided into two subfamilies, viz. the Rallinæ and the Fulicinæ, the latter consisting of the Coots, which have their toes externally scalloped with a web, as in the Grebes. The remaining species have long and slender toes, armed with a sharp claw, and they may be divided into two main groups, the Rails and the Water-hens. The former have a slender body, while the latter are somewhat plump, resembling the Coots in their general aspect, and, like them, having a frontal shield, but not possessing the lobed toes of the Fulicinæ.

The external characteristics of the family are evident to all students of ornithology, and the anatomical characters may be summed up as follows:—A schizorhinal palate, holorhinal nostrils, a single notch on the posterior margin of the sternum, and a tufted oil-gland.

The species are of almost cosmopolitan distribution.

Subfam. *RALLINÆ*.

The true Rails have very long toes and a long beak. The Crakes, which have the outward characters and habits of the species of the genus *Rallus*, have a shorter and more thick-set bill, less than the length of the middle toe and claw; they are mostly of sombre coloration. The Purple Gallinules and Moor-hens, on the other hand, are birds of large size, remarkable for the development of their toes, and are ornamented with a bare shield of red or yellow on the forehead.

Members of the subfamily Rallinæ are to be found in all tropical and subtropical portions of the globe, and the species, being mostly non-migratory, are confined within certain definite limits. They are usually restricted to marshes and the neighbourhood of rivers.

The eggs are generally buff or cream-coloured, with numerous spots, and of small size. The young are covered with down, and are able to shift for themselves very shortly after emerging from the shell.

RALLUS.

Rallus, Linn. Syst. Nat. i. p. 261 (1766); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 6 (1894).

The Rails, of which the genus *Rallus* is typical, differ from the Crakes and Water-hens in their long and delicate bill and short tarsus, as compared with the slender toes. The culmen equals, and sometimes exceeds, the middle toe and claw in length; and the tarsus is never longer than the middle toe and claw, the genus differing in this respect from *Aramides*.

Species of *Rallus* are to be found in most parts of the globe. The American repre-

sentatives are peculiarly coloured, having the breast buffy-vinous or rufous, instead of grey, as in the Old-World forms.

1. Rallus tenuirostris.

Rallus elegans, var. *tenuirostris*, Ridgw. Amer. Nat. viii. p. 14[1].

Rallus elegans tenuirostris, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 177[2].

Rallus tenuirostris, Ridgw. Man. N. Amer. Birds, p. 138[3]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 10[4].

Rallus longirostris (nec Bodd.), Scl. P. Z. S. 1864, p. 179[5]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 358 (pt.)[6].

Rallus elegans (nec Audub.), Scl. & Salv. P. Z. S. 1868, p. 444 (pt.)[7]; Lawr. Mem. Bost. Soc. N. H. ii. p. 311[8].

Rallus crepitans (nec Gm.), Herrera, La Nat. (2) i. pp. 186[9], 327[10].

Brunneus, nigro late striolatus, plumis singulis medialiter nigris brunneo longitudinaliter marginatis; tectricibus alarum exterioribus concoloribus ferrugineis; tectricibus primariorum remigibusque sepiariis, secundariis intimis dorso concoloribus; rectricibus nigris, brunneo marginatis; pileo nuchaque saturate brunneis concoloribus, frontis plumarum rhachidibus nitentibus nigris; loris et regione parotica fumoso-brunneis, fascia supralorali alba vix rufo tincta; genis et gula albis, illis vinaceo-rufo superne lavatis; gutture imo et pectore toto saturate vinaceo-ferrugineis; abdomine medio albido; corporis lateribus et subalaribus brunneis, fasciis albis nigro-marginatis transversim notatis; subcaudalibus albis: rostro brunneo, mandibula flavicante; pedibus brunneis; iride rubra. Long. tota circa 14·0, alæ 5·6, caudæ 2·3, culm. 2·15, tarsi 1·75. (Descr. avis adulti ex Valley of Mexico. Mus. nostr.)

Juv. adulto similis, sed corporis lateribus rufescente lavatis, concoloribus, vix pallidius transfasciatis; subcaudalibus vinaceis, longioribus albis subterminaliter nigro maculatis.

Hab. Mexico, Mazatlan (*Grayson*[8]), Valley of Mexico (*White*[4 5 7], *Herrera*[9 10]), Laguna del Rosario, Tlaxcala (*Ferrari-Perez*[2]).

R. tenuirostris is the Mexican representative of *R. elegans*, which is widely distributed in the Nearctic Region, and is replaced by several closely allied forms in Central and South America. It differs chiefly from the North-American bird in having the flanks brown, with numerous narrow transverse bars of a lighter colour.

No special notes have been published on its habits, but they are doubtless similar to those of the North-American species, which are described as shy, frequenting mangroves on the sea-shore or reedy marshes.

Messrs. Newton, in their "Observations on the Birds of the Island of St. Croix" (Ibis, 1859, pp. 260, 261), state that the allied *R. longirostris* is very noisy, especially in the evening, and that when a gun is fired in their haunts they may be heard on every side.

The eggs are about ten in number, and vary from pale buff to a dirty white, with spots and blotches of reddish-brown, lilac, and slate-colour[6].

2. Rallus virginianus.

Le Rasle de Virginie, Briss. Orn. v. p. 175[1].

Rallus virginianus, Linn. Syst. Nat. i. p. 263[2]; Scl. & Salv. Ibis, 1860, p. 277[3]; P. Z. S. 1868, p. 445[4]; Dresser, Ibis, 1866, p. 40[5]; Lawr. Mem. Bost. Soc. N. H. ii. p. 311[6]; Baird, Brew.,

& Ridgw. Water-Birds N. Amer. i. p. 363[7]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 16[8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 78[9]; Chapman, Bull. Amer. Mus. N. H. x. p. 36[10]; Oates, Eggs Brit. Mus. i. p. 110, t. 9. fig. 1[11].

Saturate brunneus, nigro late striatus; tectricibus alarum magis ferrugineis, majoribus externis nigro et albo irregulariter fasciatim notatis; remigibus et rectricibus sepiariis, secundariis intimis dorso concoloribus; pileo nuchaque nigricantibus, plumis indistincte brunneo marginatis; superciliis et facie laterali fumoso-plumbeis, fascia supralorali albida, genis vinaceo lavatis; gutture albo; corpore reliquo subtus vinaceo-ferrugineo, abdomine pallidiore isabellino; hypochondriis et subalaribus nigris albo transfasciatis; crisso saturate vinaceo-rufo, subcaudalibus nigris, albo marginatis: rostro brunneo, mandibula flavicante; pedibus olivascenti-brunneis; iride rubra. Long. tota circa 7·5, alæ 3·85, caudæ 1·6, culm. 1·45, tarsi 1·2. (Descr. feminæ adultæ ex Ciudad Vieja, Guatemala. Mus. nostr.)

Juv. adulto similis, sed supra magis nigrescens, tectricibus alarum læte ferrugineis, et corpore subtus nigro vix rufo variegato, gutture et abdomine medio albis distinguendus. (Descr. avis juvenis ex Dueñas. Mus. nostr.)

Hab. North America generally, from the British Provinces southward[9].—Mexico, Mazatlan (*Grayson*[6]), Matamoros (*Dresser*[5]), Jalapa (*Chapman*[10]), Tizimin, N. Yucatan (*Gaumer*[8]); Guatemala, Dueñas[8], Ciudad Vieja[8], Antigua[3] (*O. S. & F. D. G.*).—West Indies, Cuba[9].

The Virginian Rail, which is the New-World representative of *R. aquaticus* of Europe, is found over the greater part of North America during the breeding-season, and migrates as far south as Guatemala in winter. In Western Mexico it arrives in the latter part of October, leaving again in spring, but is not abundant. A specimen was obtained at Tizimin, in Northern Yucatan[7], on the 23rd June, which suggests the probability of its nesting in that district. In Guatemala we found *R. virginianus* in September and October only, and procured specimens at Dueñas in both these months, one being a young bird, doubtless bred in the marsh near the lake.

Like all other members of the genus *Rallus*, this species is very shy and seldom seen on the wing; when pressed it escapes by running, threading its way through reeds and grass with marvellous speed and agility. Nuttall likens the note to the sound of a watchman's rattle.

The eggs are cream-coloured, delicately marked with small well-developed spots of rufous and pale purple, more frequent at the larger end than elsewhere.

ARAMIDES.

Aramides, Pucheran, Rev. Zool. 1845, p. 277; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 53 (1894).

The members of the genus *Aramides* are all somewhat remarkable for their bright colour, which contrasts with the sombre plumage of the true Rails. As with them, the bill is furnished with a distinct longitudinal groove near the base of the lower mandible; the tarsus, however, is longer than in *Rallus*, and exceeds the length of the middle toe and claw.

Aramides belongs to a group which embraces several genera of the Australian region, such as *Eulabeornis*, *Gymnocrex*, and *Aramidopsis*, the last, from the island of Celebes,

strongly resembling the American species of the present genus in the pattern of its plumage.

We have reason to believe that these birds chiefly frequent the bush in the vicinity of rivers, where they may be heard uttering their peculiar note, unlike that of any other Rail. They are exclusively Neotropical.

1. **Aramides axillaris.** (Tab. LXXVII.)

Aramides axillaris, Lawr. Pr. Acad. Philad. 1863, p. 107 [1]; Mem. Bost. Soc. N. H. ii. p. 311 [2]; Scl. & Salv. P. Z. S. 1868, p. 449 [3]; Salv. Ibis, 1874, p. 327 [4]; Boucard, P. Z. S. 1883, p. 462 [5]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 56 [6].

Supra viridescenti-olivaceus, tectricibus alarum et secundariis intimis dorso concoloribus; remigibus ferrugineis, apicem versus brunnescentibus; uropygio brunnescenti-nigro; supracaudalibus caudaque nigerrimis; pileo et collo postico castaneis, collo imo postico et interscapulio schistaceis; facie laterali vinaceo-castanea, gula vinascenti-alba; corpore reliquo subtus castaneo, abdomine plumbescente; hypochondriis imis, tibiis et crisso fumoso-nigris, subcaudalibus nigerrimis; subalaribus et axillaribus fumoso-nigris, albo, vix rufescente, transfasciatis: rostro viridi, ad basin flavo; pedibus vinaceo-rubris; palpebis et iride rubris. Long. tota circa 12·5, alæ 6·9, caudæ 2·2, culm. 1·6, tarsi 2·15. (Descr. avis adulti ex Venezuela. Mus. nostr.)

Hab. Mexico, Mazatlan, San Blas (*Grayson* [2]), Las Bocas de Silan, N. Yucatan (*Cabot* [4]); British Honduras, Belize (*Bocourt* [3]).—Colombia [1 6]; Venezuela [6]; Trinidad [6]; British Guiana [6].

A species very easily recognized by its chestnut head and neck, which are of the same colour as the throat and under surface of the body, the under wing-coverts being blackish with white cross-bars. *A. axillaris* was originally described from Barranquilla, Colombia, by Lawrence [1], and we have a specimen from Venezuela in our collection obtained by Mr. Spence [6]; the bird procured by Schomburgk in British Guiana also proves to be of the same species [3 6]. As it has only been recorded from Mexico and British Honduras within our limits, there appears to be a considerable break in its distribution, and since we have not had the opportunity of comparing the Central-American with southern examples it is possible that they may prove distinct.

Grayson [2] obtained a specimen in the mangrove-swamps near San Blas in 1866, and a second was shot by his son in April 1867; the stomachs of both birds contained the remains of small crabs and diminutive mollusca. During the months of April and May he states that he heard the chattering of these birds in the mangroves throughout the night. *A. axillaris* is a resident of Western Mexico, and does not appear to migrate.

2. **Aramides chiricote.**

Chiricote, Azara, Apunt. iii. p. 214 [1].

Rallus chiricote, Vieill. N. Dict. d'Hist. Nat. xxviii. p. 551 [2].

Aramides chiricote, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 58 [3]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 12 [4].

Aramides cayanea chiricote, Bangs, Pr. New England Zool. Club, ii. p. 14 [5].

Aramides cayennensis (nec Gm.), Scl. P. Z. S. 1856, p. 143 [6]; Cass. Pr. Acad. Philad. 1860, p. 196 [7]; Salv. P. Z. S. 1867, p. 161 [8]; Scl. & Salv. P. Z. S. 1868, p. 447 [9]; Lawr. Ann. Lyc. N. Y. ix. p. 143 [10]; Richm. Pr. U. S. Nat. Mus. xvi. p. 528 [11].

Supra viridescenti-olivaceus, secundariis intimis dorso concoloribus; tectricibus alarum interioribus magis ochracescentibus; tectricibus reliquis externis et remigibus ferrugineis, his ad apicem brunneis; dorso postico brunnescenti-nigro; uropygio, supracaudalibus et rectricibus nigris; pileo schistaceo, postice obscure fuscescente; collo postico et interscapulio summo schistaceo-cinereis; loris et facie laterali tota pallide cinereis; gutture albo; præpectore angusto cinereo; corpore reliquo subtus dilute castaneo; hypochondriis imis, crisso et subcaudalibus nigerrimis; tibiis cinereis; subalaribus et axillaribus ferrugineis, nigro late fasciatis; remigibus infra rufis: rostro flavo, apice viridi; pedibus pallide corallinis; palpebris et iride læte coccineis. Long. tota circa 12·0, alæ 7·7, caudæ 2·5, culm. 2·1, tarsi 3·15. (Descr. exempl. ad. ex Veragua. Mus. nostr.).

Hab. Costa Rica, Pacific slope (*Alfaro* [11]), Talamanca (*Gabb* [11]), Santa Ana (*Zeledon* [10]); Panama, David (*Bridges* [6 8], *Hicks* [13]), Veragua (*Arcé* [3]), Lion Hill Station (*M'Leannan* [3 9 12], *Brown* [5]), Laguna de Pita (*Festa* [4]).—Colombia [3]; Amazons [3]; Brazil [3]; Peru [3].

This is a race of *A. cayennensis*, Gmel., but differs from it in having a brown shade on the back of the head and neck. Its range extends from Eastern and Central Brazil through Amazonia to Colombia and Costa Rica. *A. chiricote* frequents the scrub on the banks of rivers and salt-water marshes.

3. **Aramides albiventris.**

Aramides albiventris, Lawr. Pr. Acad. Philad. 1867, p. 234 [1]; Ann. Lyc. N. Y. ix. p. 143 [2]; Bull. U. S. Nat. Mus. no. 4, p. 49 [3]; Scl. & Salv. P. Z. S. 1870, p. 838 [4]; Salv. Ibis, 1874, p. 327 [5]; Sumichr. La Nat. v. p. 229 [6]; Boucard, P. Z. S. 1883, p. 462 [7]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 177 [8]; Herrera, La Nat. (2) i. pp. 186 [9], 327 [10]; Salv. Ibis, 1889, p. 378 [11], 1890, p. 89 [12]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 59 [13]; Richm. Pr. U. S. Nat. Mus. xviii. p. 627 [14].

Aramides cayennensis (nec Gm.), Scl. P. Z. S. 1857, p. 206 [15]; 1859, p. 393 [16]; Scl. & Salv. Ibis, 1859, p. 230 [17]; Moore, P. Z. S. 1859, p. 64 [18].

Aramides maximus, Dugès, La Nat. i. p. 142 [19].

A. chiricote similis, sed pileo postico vinaceo-rufo, pectore pallidiore cinnamomeo, et plumis pectoris imi albido terminatis. Long. tota circa 13·5, alæ 7·6, caudæ 2·5, culm. 2·5, tarsi 3·1. (Descr. av. adulti ex Choctum. Mus. nostr.).

Hab. Mexico, Alta Mira (*Armstrong* [14]), Tampico and Tehuantepec (*Richardson* [13]), San Francisco (*Sumichrast* [3]), Valley of Mexico (*Herrera* [9 10]), Vera Cruz (*Dugès* [19]), San Andres Tuxtla (*Sallé* [15]), Actopam, Vega de Alatorre (*Ferrari Perez* [8]), Playa Vicente, Vega del Casadero, Laguna Verde (*Trujillo* [13]), Oaxaca (*Boucard* [16], *Richardson* [13]), Las Bocas de Silan, W. Yucatan (*Cabot* [5 7]), Cozumel I. [11 12] (*Gaumer*); British Honduras [1], Belize (*Blancaneaux* [13]); Guatemala [1], Choctum, Vera Paz, mouth of Rio Samala (*O. S. & F. D. G.* [13]), Retalhuleu (*Richardson* [13]); Honduras, Omoa (*Leyland* [17 18]), San Pedro (*Whitely* [4]); Costa Rica (*Carmiol* [13]).

This Wood-Rail is distinguished by the pale whitish tips to the chestnut feathers of the lower part of the breast; the name *albiventris*, however, is not particularly well chosen, as the entire belly is not white. It differs further from *A. chiricote* and *A. cayennensis* in the vinous-red patch on the crown.

The habits of this species are doubtless similar to those of its allies. Mr. Leyland says that its cry is remarkable, and more like that of a quadruped than a bird.

4. Aramides plumbeicollis.

Aramides plumbeicollis, Zeledon, An. Mus. Nac. Costa Rica, i. p. 131 [1]; ii. p. 3 [2]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 53, note [3]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 528 [4]; Underwood, Ibis, 1896, p. 450 [5].

Artamides cayennensis (nec Gm.), Scl. & Salv. P. Z. S. 1867, p. 280 [6]; v. Frantzius, J. f. Orn. 1869, p. 375 [7]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 131 [8]; Ridgw. Pr. U. S. Nat. Mus. x. p. 594 [9].

Ortygarchus cayennensis (nec Gm.), Cab. J. f. Orn. 1869, p. 212 [10].

Aramides ruficollis (nec Bp.), Lawr. Ann. Lyc. N. Y. viii. p. 178 [11].

A. albiventri similis, et plaga nuchali vinaceo-rufa; collo imo saturate schistaceo; pectore saturate cinnamomeo, et plumis albido terminatis nullis. Long. tota circa 15·0, alæ 7·8, caudæ 2·1, culm. 2·4, tarsi 3·1. (Descr. maris adulti ex Miravalles, Costa Rica. Mus. Brit.)

Hab. Honduras, Segovia River (*Townsend* [4 9]); Nicaragua, Blewfields (*Wickham* [6]), Greytown (*Holland* [11]), Escondido River (*Richmond* [4]); Costa Rica (*v. Frantzius* [7 10]), Eastern slope (*Richmond* [4]), Alajuela (*Zeledon* [8]), Miravalles [5], Carrillo (*Underwood*), Jiménez (*Alfaro* [1 2]).

This is a dark-plumaged race of *A. chiricote*, but is distinguished by the vinous patch on the nape; the grey on the throat is darker and more extended, while the white is somewhat restricted; the chestnut colour of the breast and wings is deeper and the whitish-tipped feathers of the latter are absent. Mr. Richmond [4] shot one of a pair in the woods on the bank of the Escondido River, Nicaragua, at which the other bird set up a loud scolding. He states that this specimen agreed with the typical bird obtained at Jiménez by Señor Alfaro, who informed him that the allied species, *A. chiricote*, was found only on the Pacific coast in Costa Rica. All specimens from the eastern side examined by Mr. Richmond proved to be *A. plumbeicollis*, with the exception of a single individual labelled "Talamanca (*Gabb*)"; the bird from the Segovia River in the National Museum also belongs to the latter species. Mr. Underwood obtained two examples on the Volcan de Miravalles and saw another; they were very tame and allowed of a close approach.

AMAUROLIMNAS.

Porzana, pt., auct. recent.

Amaurolimnas, Sharpe, Bull. Brit. Orn. Club, i. p. xxviii (1893); Cat. Birds Brit. Mus. xxiii. p. 87 (1894).

This genus differs from the true Rails in the form of the bill, which is shorter and deeper than in *Rallus* and *Aramides*.

Amaurolimnas has but one species, *A. concolor*, a small Crake, with the plumage, including the under wing-coverts and the axillaries, of a uniform dull colour; the tarsus and middle toe are nearly the same length; the bill is somewhat more elongated than in the allied genera, the culmen being equal to the inner toe.

1. Amaurolimnas concolor.

Rallus concolor, Gosse, Birds of Jamaica, p. 369, t. 103 [1].
Porzana concolor, Scl. & Salv. P. Z. S. 1868, p. 452 [2]; Scl. Ibis, 1873, p. 373 [3].
Amaurolimnas concolor, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 87 [4].
Corethrura cayennensis (nec Gm.), Moore, P. Z. S. 1859, p. 64 [5]; Scl. & Salv. Ibis, 1859, p. 230 [6].
Corethrura guatemalensis, Lawr. Pr. Acad. Philad. 1863, p. 106 [7].

Supra rufescenti-brunneus, dorso vix olivascente adumbrato; alis caudaque lætius castaneis; pileo dorso concolore vix saturatiore; superciliis facie laterali et corpore subtus toto saturate vinaceo-castaneis, mento summo paullo pallidiore. Long. tota circa 7·5, alæ 4·35, caudæ 1·8, culm. 1·0, tarsi 1·4. (Descr. exempl. ad. ex Guatemala. Mus. nostr.)

Hab. GUATEMALA [2 7] (*M'Leannan* [4]); HONDURAS, Omoa (*Leyland* [5 6]); NICARAGUA, Chontales (*Belt* [3 4]).—GUIANA [4]; BRAZIL [4]; JAMAICA [4].

Little is known of this bird. Leyland says that it was not common near Omoa, where the species kept to the bush and ran like a Quail. It uttered a shrill whistle resembling that of a Tinamou, and its note might easily be mistaken for that of one of the latter birds.

PORZANA.

Porzana, Vieill. Analyse, p. 61 (1816); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 92 (1894).

The genus *Porzana*, which contains the typical Crakes, is distinguished from the foregoing by the somewhat shorter tarsus, which is exceeded in length by that of the middle toe and claw. The secondaries are shorter than the primaries, and the difference in length is greater than that of the hind toe and claw, so that the wing is slightly less rounded than in some of the allied genera. The sexes are alike in colour, and the northern forms are migratory.

About fourteen species are known, these being distributed over the greater portion of the globe, but only one, *P. carolina*, a migrant from North America, occurs within our limits.

1. Porzana carolina.

The Little American Water-hen, Edwards, Nat. Hist. Birds, iii. t. 144 [1].
Rallus carolinus, Linn. Syst. Nat. i. p. 263 [2].
Porzana carolina, Scl. & Salv. Ibis, 1859, p. 230 [3], 1864, p. 372 [4], 1868, p. 450 [5]; Lawr. Ann. Lyc. N. Y. vii. p. 479 [6]; Mem. Bost. Soc. N. H. ii. p. 312 [7]; Scl. P. Z. S. 1864, p. 179 [8]; Salv.

P. Z. S. 1870, p. 219 [9]; Cat. Strickl. Coll. p. 582 [10]; Ibis, 1889, p. 378 [11]; Sumichr. La Nat. v. p. 229 [12]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 177 [13]; Ridgw. op. cit. x. p. 578 [14]; Herrera, La Nat. (2) i. pp. 186 [15], 327 [16]; Cherrie, Auk, 1892, p. 329 [17]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 79 [18]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 97 [19]; Bangs, Pr. New Engl. Zool. Club, ii. p. 14 [20].

Crex carolina, v. Frantz. J. f. Orn. 1869, p. 375 [21].

Ortigometra carolina, Dugès, La Nat. i. p. 142 [22].

Supra olivaceo-brunnea, nigro medialiter late striata, plumis fere omnibus albo lateraliter maculatis vel marginatis; secundariis intimis dorso concoloribus et eodem modo lineatis; tectricibus alarum concoloribus, clarius olivaceis, majoribus nonnullis extus albo maculatis; tectricibus primariorum et remigibus sepiariis, extus olivaceo lavatis, primario extimo anguste albo marginato; rectricibus nigris, olivaceo marginatis; pileo et colli lateribus saturate olivascenti-brunneis, vertice medio nigro, nucha quoque nigro striolata; fronte antica, supercilio distincto, facie laterali, gutture et pectore summo schistaceis, regione parotica superiore pallide olivaceo-brunnea; loris et gula media nigris; pectore imo et abdomine albis; corporis lateribus et axillaribus nigricantibus, albo transfasciatis; tibiis cinereis; hypochondriis imis et subcaudalibus cervinis; subalaribus albis, imis nigro fasciatis; remigibus infra cinerascentibus, intus pallidioribus: rostro fusco, ad basin viridi; pedibus flavicanti-viridibus, unguibus brunneis; iride læte castanea. Long. tota circa 7·5, alæ 4·3, caudæ 1·9, culm. 0·8, tarsi 1·35. (Descr. exempl. adult. ex Belize. Mus. nostr.)

Juv. Clarius olivascens, gula alba, gutturer eliquo et præpectore cervino-brunneis distinguenda. (Descr. av. juvenis ex Dueñas. Mus. nostr.)

Hab. North America, breeding chiefly to the northward, but less commonly on the Pacific coast; casually north to South Greenland [18].—Mexico, Mazatlan (*Grayson* [7]), Valley of Mexico (*Herrera* [15 16]), city of Mexico (*White* [9]), Guanajuato (*Dugès* [22]), Cacoprieto, Orizaba, Valley of Mexico (*Sumichrast* [12]), Chapulco, Puebla (*Ferrari-Perez* [13]), Progreso, N. Yucatan (*Devis* [19]), Cozumel I. (*Gaumer* [11 19]); British Honduras, Belize (*Blancaneaux* [19]); Guatemala (*Constancia* [10]), Vera Paz (*Skinner* [3]), Coban, Lake of Dueñas (*O. S. & F. D. G.* [3 19]); Costa Rica (*v. Frantzius* [21]), San José (*Cherrie* [17]), Laguna de Cartago (*Underwood in litt.*); Panama [4 6], Chiriqui (*Arcé* [9]), Lion Hill Station [19] (*M'Leannan*, *Brown* [20]).—Colombia [19]; Ecuador [19]; Swan I. (*Townsend* [14]); West Indies [19].—Europe, incidental [19].

P. carolina is widely distributed over North America, and nests throughout the greater part of its range. In winter it migrates south, and at this season visits our region and northern South America. Grayson [7] observed a few specimens near Mazatlan in March, and in Guatemala [3] we found it about the Lake of Dueñas; here the species appeared to be migratory, leaving the district on the approach of summer.

CRECISCUS.

Creciscus, Cab. J. f. Orn. 1856, p. 428; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 134 (1894).

An American genus including some small species, which differ from *Porzana* in their more rounded wings, the primaries and secondaries being practically equal in length. They are remarkable for their fluffy, variegated plumage and somewhat bright colour.

About sixteen species of *Creciscus* are known, of which five are found in Central America.

1. Creciscus jamaicensis.

The Least Water-hen, Edwards, Gleanings, vi. p. 142, t. 278. fig. 2 [1].
Rallus jamaicensis, Gm. Syst. Nat. i. p. 718 [2].
Ortygometra jamaicensis, Salv. Ibis, 1866, p. 198 [3].
Porzana jamaicensis, Scl. & Salv. P. Z. S. 1868, p. 455 [4]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 79 [5]; Scott, Auk, vii. p. 400 [6].
Creciscus jamaicensis, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 135 [7].

Supra nigricans, maculis albis nigro marginatis ornatus; alis magis brunnescentibus albo maculatis, secundariis intimis dorso concoloribus; remigibus reliquis sepiariis, primario primo albo anguste marginato; cauda nigra; pileo et facie laterali plumbescenti-nigris; collo postico et laterali cum interscapulio summo sordide castaneo-brunneis; corpore subtus toto plumbeo-schistaceo; crisso et hypochondriis imis nigris albo fasciatis; subcaudalibus nigris, cervino marginatis et terminatis; subalaribus fuscescenti-nigris, albo marginatis; axillaribus nigris albo minute maculatis: rostro nigro; pedibus vivide flavicanti-viridibus; iride rubra. Long. tota circa 4·8, alæ 2·65, caudæ 1·2, culm. 0·6, tarsi 0·8. (Descr. exempl. ad. ex California. Mus. nostr.)

Juv. adulto similis, sed magis olivascens, eodem modo albo maculatus; collo postico rufescenti-brunneo: subtus colore schistaceo pallidiore et gula albida distinguendus. (Descr. av. juv. ex Dueñas. Mus. nostr.)

Hab. North America, north to Massachusetts, Northern Illinois, and Oregon [5], Florida [6]. —Guatemala, Lake of Dueñas (*Fraser* [3], *Salvin* [4 7]).—West Indies, Jamaica [7].

This diminutive species is easily recognized by its size, blackish colour, relieved by small spots and bars of white, leaden-grey under surface, and chestnut-brown mantle and back of the neck.

C. jamaicensis seems to be very rare, even in the places where it breeds, and only two instances of its occurrence in Central America have been recorded. Fraser obtained one specimen on the Lake of Dueñas, and we procured an immature bird in the same district.

2. Creciscus exilis.

Rallus cinereus, Vieill. N. Dict. d'Hist. Nat. xxviii. p. 556 (nec *Porphyrio cinerea*, Vieill.) [1].
Ortygometra cinerea, Gray, Gen. Birds, iii. p. 593 [2]; Léot. Ois. Trinidad, p. 495 [3].
Porzana cinerea, Scl. & Salv. P. Z. S. 1868, p. 456 [4]; 1873, p. 308 [5]; Pelz. Orn. Bras. p. 317 [6]; Tacz. Orn. Pérou, iii. p. 322 [7].
Aramides cinerea, Gray, Hand-l. Birds, iii. p. 61 [8].
Rallus exilis, Temm. Pl. Col. v. t. 523 [9].
Laterirallus exilis, Bp. C. R. xliii. p. 599 [10].
Porzana exilis, Schl. Mus. Pays-Bas, Ralli, p. 35 [11]; Scl. & Salv. P. Z. S. 1866, p. 567 [12].
Creciscus exilis, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 138 [13].
Creciscus exilis vagans, Ridgw. Pr. U. S. Nat. Mus. x. p. 595 [14]; Richm. op. cit. xvi. p. 530 [15].
Creciscus vagans, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 139 [16].
Gallinula ruficollis, Swains. Anim. in Menag. p. 349 [17].

Supra olivascenti-chocolatinus, uropygio et supracaudalibus nigris, albido transfasciatis; remigibus sepiariis, primario primo anguste albido limbato; pileo plumbeo; facie laterali, colli et pectoris lateribus cinereis; gutture, pectore et adbomine medialiter albis, præpectore vix cinereo lavato; corpore reliquo subtus albo nigroque transfasciato, tibiis hypochondriisque nigris et subcaudalibus cervino tinctis; axillaribus nigris albo transfasciatis; subalaribus albis, plumis ad basin fuscis: rostro nigro, ad basin mandibulæ virescente; pedibus pallide brunneis; iride rubra; palpebris ochraceo-brunneis. Long. tota circa 5·8, alæ 2·9, caudæ 1·35, culm. 0·7, tarsi 1·0. (Descr. maris adulti ex Nauta. Mus. Brit.)

Av. juv. præcedenti similis, sed tectricibus alarum majoribus albo transfasciatis. (Descr. exempl. ex Maroni River. Mus. nostr.)

Hab. Honduras, Segovia River (*Townsend* [14]); Nicaragua, Escondido River (*Richmond* [15]). —Guiana [4 11 13]; Amazons [4 5 12 13]; Trinidad [3 4 13].

The Central-American form of *C. exilis* has been described by Mr. Ridgway as a subspecies, *C. exilis vagans*, on account of its greater size and the relatively longer tarsus; he, however, saw but a single example, from the Segovia River, Honduras. Mr. Richmond subsequently procured a specimen on the Escondido River, Nicaragua, of which he gives measurements that do not exceed those of some of the South-American skins in the British Museum. Further evidence is therefore required before *C. exilis vagans* can be definitely regarded as a distinct race, the gap in the recorded geographical distribution not proving much in a bird of such retiring habits.

As Mr. Ridgway admits that there is no difference in colour between them, and as we have no Central-American specimens in our collection, we have described a male and female from the Upper Amazons and Guiana respectively.

3. Creciscus albigularis.

Corethrura albigularis, Lawr. Ann. Lyc. N. Y. vii. p. 302 [1]; Scl. & Salv. P. Z. S. 1864, p. 372 [2].

Porzana albigularis, Scl. & Salv. Ex. Orn. p. 109, pl. 55 [3]; P. Z. S. 1868, p. 454 [4]; Ridgw. Pr. U. S. Nat. Mus. x. p. 111 [5]; Bangs, Pr. New Engl. Zool. Club, ii. p. 14 [6].

Creciscus albigularis, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 140 [7]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 12 [8].

Porzana alfari, Ridgw. Pr. U. S. Nat. Mus. x. p. 111 [9].

Creciscus alfara, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 141, note [10].

Supra brunneus, uropygio et supracaudalibus vix saturatioribus; cauda nigra; tectricibus alarum dorso concoloribus; remigibus sepiariis, secundariis intimis dorso concoloribus; pileo brunneo, dorso concolore; facie laterali, collo postico et laterali clare castaneis; gula et abdomine medio pure albis; gutture imo, præpectore et pectore summo læte castaneis; corporis lateribus cum subcaudalibus et axillaribus nigris albo transfasciatis; subalaribus albis, plumis basaliter nigris, quasi fasciatis. Long. tota circa 5·0, alæ 2·95, caudæ 1·0, culm. 0·8, tarsi 1·1. (Descr. feminæ adultæ ex Lion Hill Station, Panama. Mus. nostr.)

Hab. Costa Rica, Las Trojas (*Alfaro* [9 10]); Panama [1 2 4], Veragua (*Arcé* [7]), Lion Hill (*M'Leannan* [7], *Brown* [6]), Laguna de Pita (*Festa* [8]).—Colombia [7].

C. albigularis belongs to the rufous- or white-breasted section of the genus, with barred axillaries, but differs from *C. exilis* in having the back of the neck and mantle brown, like the rest of the upper surface, and not rufous as in that species. It agrees with *C. cinereiceps* in having the throat white, whence the specific name, and

differs from its South-American allies, *C. œnops* and *C. melanophæus*, in having the front of the neck and breast chestnut. *C. alfari*, from Costa Rica, has been described as a distinct species on account of the broader black bars on the flanks, but this is a variable character.

4. Creciscus cinereiceps.

Porzana cinereiceps, Lawr. Ann. Lyc. N. Y. xi. p. 90 [1]; Ridgw. Pr. U. S. Nat. Mus. i. p. 252 [2]; vi. p. 409, note [3]; x. p. 111 [4]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 131 [5]; Richm. Pr. U. S. Nat. Mus. xvi. p. 528 [6].

Creciscus cinereiceps, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 141, note [7].

Porzana albigularis (nec Lawr.), Scl. & Salv. P. Z. S. 1867, p. 280 [8]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 140 (part.) [9].

Porzana leucogastra, Nutting, Pr. U. S. Nat. Mus. vi. p. 408 [10]; Ridgw. op. cit. x. p. 111 [11].

Creciscus leucogaster, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 140, note [12].

C. albigulari similis, sed facie laterali clare cinerea distinguendus. Long. tota circa 5·5, alæ 3·05, caudæ 0·85, culm. 0·85, tarsi 1·1. (Descr. feminæ adultæ ex Escondido River. Mus. nostr.)

Hab. Nicaragua, Greytown (*U. S. Nat. Mus.* [6]), Blewfields (*Wickham* [8], *Richardson*), Rio Escondido (*Richmond* [6]), Los Sabálos (*Nutting* [10]); Costa Rica, La Barranca, Nicoya (*Arcé* [7]), Talamanca (*Gabb* [1]), Pacuarito, Desamparados, Jiménez, Reventazon, Sipurio, Juan Vinas, Azahar de Cartago, Carrillo (*Underwood in litt.*), Pacuare (*Zeledon* [5]), Rio Frio (*Richmond* [6]).

C. cinereiceps is easily distinguished from *C. albigularis* by its grey face. When Dr. Bowdler Sharpe wrote the 'Catalogue of Birds,' the series in the British Museum was very small, and we had in our collection only a young bird from Costa Rica, so that it was impossible to judge respecting *C. cinereiceps*. We have now, however, seen several Nicaraguan specimens collected by Mr. Richmond, as well as some from Costa Rica sent us by Mr. Underwood. Our series exhibits considerable variation as regards the extent of the rufous colour on the underparts, the width of the black bars on the flanks, and the presence or absence of light bars on the wing-coverts. We find the observations of Mr. Richmond on these points borne out by the series before us, and it is evident that the characters brought forward by Mr. Ridgway for the separation of his *Porzana leucogastra* from *P. cinereiceps* are not of specific value. Mr. Richmond procured many specimens on the Escondido River, Nicaragua, where it was very plentiful in the tall grass.

He states that the nest is almost globular and has a small entrance at the side, and is placed about a foot from the ground. The bird is rarely found on the nest, as it skulks off in the grass at the approach of danger, uttering a sharp cry. Specimens were frequently caught in traps set on the river-bank for small mammals. The eggs are pale creamy-white, spotted, chiefly at the larger end, with cinnamon-rufous mixed with lavender. Nests were found from early in May till late in August [6].

5. Creciscus ruber.

Corethrura rubra, Scl. & Salv. Ibis, 1860, p. 277[1]; P. Z. S. 1860, p. 300[2].

Porzana rubra, Scl. & Salv. P. Z. S. 1868, p. 452[3]; Exot. Orn. p. 31, t. 16[4]; Salv. Ibis, 1889, p. 378[5]; 1890, p. 89[6].

Creciscus ruber, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 143[7].

Castaneus, dorso postico brunnescentiore; remigibus sepiariis; cauda nigra; pileo et facie laterali schistaceis; corpore toto subtus saturate ferrugineo; abdomine pallidiore, corporis lateribus, subcaudalibus et axillaribus saturate castaneis; subalaribus castaneis, nonnullis albidis, ad basin fuscis. Long. tota circa 6·0, alæ 3·4, caudæ 1·45, culm. 0·8, tarsi 1·25. (Descr. exempl. typ. ex Coban. Mus. nostr.)

Hab. Mexico, Cozumel I. (*Gaumer*[5 6 7]); British Honduras (*Blancaneaux*[7]); Guatemala[3 4] (*Skinner*[1], *Constancia*[1]), Vera Paz[2 7], Coban[1], Choctum[7], Lake of Dueñas[7] (*O. S. & F. D. G.*).

The uniformly coloured axillaries and flanks, bright chestnut or ferruginous under surface, grey crown and sides of face, chestnut back, and black tail, mark *C. ruber* as a very distinct species. It appears to have a somewhat restricted range in Central America, as will be seen from the localities given above.

Nothing has been recorded of its habits.

GALLINULA.

Gallinula, Brisson, Orn. vi. p. 3 (1760); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 167 (1894).

The Water-hens, of which the European *G. chloropus* is the type, are distinguished from the Rails and Crakes by their extremely long toes and heavy Fowl-like bodies. The middle toe and claw are longer than the tarsus. The plumage is somewhat sombre and there is a bare red shield on the forehead.

The genus is found throughout the temperate and tropical portions of the globe. In the southern areas the species are resident, but those which breed in the north are more or less migratory during the winter season. Of the six species known, one alone is American.

1. Gallinula galeata.

Crex galeata, Licht. Verz. Doubl. p. 80[1].

Gallinula galeata, Bp. Amer. Orn. iv. p. 128, t. 27. fig. 1[2]; Taylor, Ibis, 1860, p. 314[3]; Lawr. Ann. Lyc. N. Y. viii. p. 184[4]; Mem. Bost. Soc. N. H. ii. p. 312[5]; Bull. U. S. Nat. Mus. no. 4, p. 50[6]; Salv. Ibis, 1866, p. 198[7]; 1870, p. 115[8]; 1889, p. 378[9]; Scl. & Salv. P. Z. S. 1868, p. 462[10]; Sumichr. La Nat. v. p. 229[11]; Nutting, Pr. U. S. Nat. Mus. vi. p. 409[12]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 388[13]; Herrera, La Nat. (2) i. pp. 186[14], 327[15]; Stone, Pr. Acad. Philad. 1890, p. 203[16]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 177[17]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 81[18].

Crex chloropus (nec L.), Licht. Preis-Verz. Mex. Vög. p. 3[19]; Cab. J. f. Orn. 1863, p. 59[20].

Supra saturate brunnea, vix olivascens, scapularibus dorso concoloribus; tectricibus alarum sordide schistaceis; remigibus et rectricibus nigris; pileo colloque undique nigris; interscapulio et corpore reliquo subtus plumbescentibus, plumis pectoris imi et abdominis albido plus minusve marginatis; subcaudalibus nigris, lateralibus conspicue albis; hypochondriis cinerascenti-brunneis, plumis elongatis albo longitudinaliter

dimidiatis ornatis; subalaribus cinerascentibus, albido marginatis; remigibus infra cinerascentibus: rostro et chlamyde frontali scarlatinis, illius apice viridi-flava; pedibus flavicanti-viridibus, tibiæ parte nuda miniata. Long. tota 13·0, alæ 6·7, caudæ 2·75, culm. 1·0, tarsi 1·95. (Descr. av. adult. ex Mexico. Mus. nostr.)

Juv. Brunnescentior, loris et gutture albis; plumis gastræi totius albido marginatis, abdomine et pectore medianis albis.

Hab. Temperate North America, from Canada southward [18].—Mexico (*Deppe & Schiede* [19 20]), Mazatlan, Tepic (*Grayson* [5]), Valley of Mexico (*Herrera* [14 15]), Tehuantepec city (*Sumichrast* [6 11]), Shkolak, Yucatan (*Stone & Baker* [16]), Peto [17], Cozumel I. [9 17] (*Gaumer*); Honduras, Lake of Yojoa (*Taylor* [3]); Guatemala [10], Lake of Dueñas (*O. S.* [7 17]); Nicaragua, Los Sábalos (*Nutting* [12]), Greytown (*Holland* [4]); Costa Rica [8] (*Carmiol* [17]).—South America [17] to Peru, Brazil, and Chile [17]; West Indies [17].

The North-American Water-hen breeds throughout the greater part of its range in the United States and Canada, as also in Western Mexico and probably further south. Grayson, who found it nesting in May and June in a lagoon near Tepic [5], states, however, that the species is principally known as a winter visitor to Western Mexico, where it arrives in considerable numbers, and at the same season it is found in Central America, the greater part of South America, and the West-Indian Islands.

The habits of *G. galeata* seem to be identical with those of the European *G. chloropus*, and its nest and eggs are also similar. The latter are from six to eight in number, of a light yellowish-brown or dark cream-colour, with spots and a few blotches of dark brown; they are slightly larger than those of the European Moor-hen, but are not otherwise distinguishable.

PORPHYRIOLA.

Porphyrula, Blyth, Cat. Birds Mus. As. Soc. p. 283 (1849, descr. nulla).
Ionornis, Reichenb. Nat. Syst. p. xxi.
Porphyriola, Sundev. Av. Meth. Tent. p. 131 (1872); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 187 (1894).

Like the foregoing genus, *Porphyriola* has a frontal shield, but is remarkable also for its bright green and blue colouring, wherein it resembles the Purple Gallinules (*Porphyrio*). From the latter, however, it is distinguished by the shape of the nostrils, which are rounded and not situated in a nasal depression in that genus, whereas in the Moor-hens (*Gallinula*) and the Blue Water-hens (*Porphyriola*) the nostrils are oval and there is a distinct nasal depression. The toes in *Porphyriola* have no lateral membranes, and in this respect the genus differs from *Gallinula*, as well as in its bright blue colour.

Of the three known species, only one inhabits our region.

1. Porphyriola martinica.

La petite Poule-Sultane, Briss. Orn. v. p. 526, t. 42. fig. 2 [1].
Fulica martinica, Linn. Syst. Nat. i. p. 259 [2].

Porphyrio martinica, Moore, P. Z. S. 1859, p. 64 [3]; Scl. & Salv. Ibis, 1859, p. 230 [4]; P. Z. S. 1868, p. 459 [5]; v. Frantz. J. f. Orn. 1869, p. 375 [6]; Lawr. Mem. Bost. Soc. N. H. ii. p. 312 [7]; Salv. Ibis, 1870, p. 115 [8]; 1889, p. 378 [9].

Gallinula martinica, Lawr. Ann. Lyc. N. Y. vii. p. 302 [10]; Scl. P. Z. S. 1864, p. 179 [11].

Ionornis martinica, Herrera, La Nat. (2) i. pp. 186 [12], 327 [13]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 384 [14]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 80 [15]; Bangs, Pr. N. Engl. Zool. Club, ii. p. 14 [16].

Porphyriola martinica, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 189 [17]; Salvad. & Festa, Boll. Mus. Torino, xiv. no. 339, p. 12 [18]; Oates, Cat. Eggs Brit. Mus. i. p. 126 [19].

Supra olivaceo-viridis, paullulum cyaneo lavata, collo postico et tectricibus alarum viridiori-cyanescentibus; remigibus nigricantibus extus viridibus; capite undique et corpore subtus toto purpurascentibus, pileo et facie laterali purpurascenti-nigris; abdomine et tibiis cum hypochondriis imis fuscescentioribus, nigricanti-purpureis; cauda olivascenti-viridi; subcaudalibus niveis; pectoris summi lateribus et tectricibus subalaribus minimis et medianis cyaneis, majoribus et remigibus intus sordide cinerascentibus: rostro læte rubro, ad apicem flavo; chlamyde frontali cyanea; pedibus flavicantibus; iride rubra. Long. tota circa 12·4, alæ 6·6, caudæ 2·8, culm. 1·2, tarsi 2·45. (Descr. maris adulti ex Costa Rica. Mus. nostr.)

♀ haud a mari distinguenda.

Juv. Brunnea, dorso postico, uropygio et cauda nigricantibus; facie laterali et corpore subtus cervino-brunneis, gutture et abdomine medio tibiisque albis.

Hab. North America, South Atlantic and Gulf States, casually northward to Maine, New York, Wisconsin, &c. [15].—Mexico, Matamoros (*Berlandier* [14]), Tampico (*Richardson* [17]), Valley of Mexico (*Herrera* [12 13]), city of Mexico (*White* [11]), Rio de Coahuayana (*Xantus* [7]), Oaxaca (*Fenochio* [17]), Cozumel I. (*Gaumer* [9]); British Honduras, Orange Walk (*Gaumer* [18]); Guatemala, lagoons near Lake Peten (*Leyland* [3 4], *O. S.* [17]), Vera Paz (*O. S. & F. D. G.* [17]); Honduras, Ruatan I. (*Gaumer* [17]); Costa Rica (*Carmiol* [17]), Pacaca, San Mateo, Santa Clara, north of the Volcan de Barba (*v. Frantzius* [6]), Laguna de Cartago (*Underwood*); Panama, Lion Hill Station (*M'Leannan* [10 17], *Brown* [16]), Laguna de Pita (*Festa* [9]).—Colombia [17]; Guiana [17]; Amazons [17]; Ecuador [17]; Brazil [17]; West Indies [17].

This species is found throughout the year in the Southern States of North America, and is probably resident in all parts of its widely distributed range. Specimens have, however, been captured in remote places and islands, thus suggesting that *P. martinica* is partially migratory. We did not find it nesting in Guatemala, but M'Leannan sent us four eggs from Panama [19].

In appearance and habits this Gallinule differs considerably from the Moor-hen, holding itself more erect and carrying the legs more forward. The species is comparatively tame and may be seen, especially in the early morning, displaying its beautiful plumage. The light weight of the bird enables it to walk on floating leaves and water-plants, balancing itself by spreading its wings. Leyland says that the young accompany their parents and are very expert on this treacherous footing.

The nest, resembling that of the Moor-hen, is loosely made of dead rushes, and is

built at a height of two or three feet from the ground among green reeds and flags. The eggs are from five to seven in number, and are of a pinkish-cream colour, closely speckled with minute dots of chocolate-brown and underlying pale purple; the markings are very small and distinct.

Subfam. *FULICINÆ.*

The Coots, though closely allied in structure and general appearance, as well as in plumage, to the Rails and Moor-hens, especially to the latter, differ from them in their lobed and Grebe-like feet, having the toes furnished with scalloped webs. They are spread over the greater part of the globe, not extending to the Arctic Regions, but breeding in the temperate portions of the Old and New Worlds, being especially plentiful in South America, where the majority of the species occur, only one inhabiting our region.

FULICA.

Fulica, Linn. Syst. Nat. i. p. 257 (1766); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 209 (1894).

The characters of the genus are the same as those of the subfamily.

1. Fulica americana.

Fulica americana, Gm. Syst. Nat. i. p. 704[1]; Scl. P. Z. S. 1857, p. 206[2]; 1859, p. 369[3]; 1864, p. 179[4]; Moore, P. Z. S. 1859, p. 64[5]; Scl. & Salv. Ibis, 1859, p. 230[6]; 1860, p. 45[7]; P. Z. S. 1868, p. 468[8]; Lawr. Ann. Lyc. N. Y. ix. p. 143[9]; Mem. Bost. Soc. N. H. ii. p. 312[10]; Bull. U. S. Nat. Mus. no. 4, p. 50[11]; Dugès, La Nat. i. p. 142[12]; v. Frantz. J. f. Orn. 1869, p. 375[13]; Salv. P. Z. S. 1870, p. 219[14]; Ibis, 1889, p. 378[15]; Sumichr. La Nat. v. p. 229[16]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 393[17]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 177[18]; Herrera, La Nat. (2) i. pp. 186[19], 327[20]; Stone, Pr. Acad. Philad. 1890, p. 217[21]; Richm. Pr. U. S. Nat. Mus. xvi. p. 528[22]; Allen, Bull. Amer. Mus. N. H. v. p. 33[23]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 221[24]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 81[25]; Oates, Cat. Eggs Brit. Mus. i. p. 131[26].

Fulica atra (nec Linn.), Licht. Preis-Verz. Mex. Vög. p. 3[27]; Cab. J. f. Orn. 1863, p. 59[28].

Fulica leucopyga, Wagler, Isis, 1831, p. 518[29].

Sordide schistacea, remigibus cinerascenti-brunneis, alæ spuriæ plumis et primario externo albo limbatis; secundariis quoque albo terminatis, intimis dorso concoloribus; pileo et collo undique nigerrimis; corpore reliquo subtus schistaceo, abdomine pallidiore, plumis anguste albo limbatis; subcaudalibus nigris, lateralibus albis; subalaribus cinereis, vix albido limbatis: rostro lacteo, apice cærulescente et utrinque macula brunnea ornato; chlamyde saturate castanea, antice flavicante; pedibus læte flavicanti-viridibus, tibiæ parte nuda aurantiaco-rubra, digitis clarius cinereis, scutellis flavicanti-viridi indicatis. Long. tota 14·5, alæ 7·8, caudæ 2·0, culm. 1·2, tarsi 2·25. (Descr. av. adulti ex Lake of Dueñas. Mus. nostr.)

Hab. North America, from Greenland and Alaska southward [25].—Mexico (*Wagler* [29], *Deppe & Schiede* [27 28]), Sonora, Pachico, Cachuta (*Robinette* [23]), Matamoros (*Dresser* [17]), Tamesi, Tampico (*Richardson* [24]), Mazatlan (*Grayson* [10], *Forrer* [24]), Colima (*Xantus* [10]), Guanajuato, Guadalajara (*Dugès* [12]), Valley of Mexico (*Herrera* [19 20]),

city of Mexico (*White* [4]), Laguna de Chapulco, Puebla, Laguna del Rosario, Tlaxcala (*Ferrari-Perez* [18]), Jonatal, Vera Cruz (*Trujillo* [24]), Jalapa (*Sallé* [2], *De Oca* [3]), Lake Patzcuaro (*Baker* [21]), San Mateo [11], Santa Maria del Mar [16], Tehuantepec [16] (*Sumichrast*), Cozumel I. (*Gaumer* [15 24]); Guatemala, Lake of Peten (*O. S.* [24]), Lake of Dueñas [6 7 26], Coban [24] (*O. S. & F. D. G.*); Honduras, Chilomo (*Leyland* [5]); Nicaragua, Escondido River (*Richmond* [22]); Costa Rica, San Antonio (*Carmiol* [9]), between San José and Cartago [13] (*v. Frantzius*); Panama, Laguna del Castillo [14], Calobre [24] (*Arcé*).—West Indies [24].

The American Coot is principally a winter visitor to Central America, though Grayson says that in Mazatlan a few pairs breed every summer. From October to May the species is abundant, and we found it nesting plentifully on the Lake of Dueñas in Guatemala during these months.

The habits of *F. americana* are similar to those of the European *F. atra*, and, like it, this species is occasionally found in large flocks. The eggs are from six to eight in number, of a pinkish stone-colour or pale buff, with numerous small dots and specks of pale purple and blackish-brown.

Fam. HELIORNITHIDÆ.

The Fin-foots, as these birds are popularly named, are nearly related to the Rallidæ, but nevertheless show some similarity in outward appearance to the Grebes. They have broad lateral webs to the toes like the Coots and Grebes, and, as in the latter, the plumage is close-set and adapted for diving, at which the Fin-foots are thoroughly expert. When, however, we examine the other anatomical characters of the Family, we find that they are aberrant Rails or Coots, and have no very close relationship with the Grebes.

The Heliornithidæ constitute a peculiar section of the Fulicariæ, and are confined to the tropical areas of both hemispheres. *Heliornis*, with a single species, is restricted to the Neotropical Region; *Podica*, with three species, to the Ethiopian; and *Heliopais*, with a single species, to the Indo-Malayan Subregion.

All the species frequent the reedy margins of large rivers, and are shy and difficult to procure, being expert swimmers and divers.

HELIORNIS.

Heliornis, Bonn. Tabl. Méth. i., Intr. p. 64 (1790); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 233 (1894).

Mr. Beddard (P. Z. S. 1890, p. 425) has written an exhaustive memoir on the African Fin-foot (*Podica senegalensis*), from which we gather the principal peculiarities of the genus *Podica* and its allies, of which *Heliornis* is one. The external characters

are easily recognized as those of a diving Rail. The body is plumper than in the typical Rallidæ, and the toes with their broad and scalloped webs are very different from those of the Rails, in which they are long and slender. *Heliornis*, moreover, has peculiarly coloured toes, these being regularly barred with black and yellow. This character alone, combined with the Ralline bill and the Grebe-like body, serves to distinguish the American Fin-foot at a glance. Many other marks of distinction, chiefly osteological, suggest an alliance with the Grebes.

Only one species of *Heliornis* is known, viz. *H. fulica*, which is found in Central and South America.

1. Heliornis fulica.

Colymbus fulica, Bodd. Tabl. Pl. Enl. p. 54 (1783) [1].

Heliornis fulica, Scl. & Salv. Ibis, 1859, p. 234 [2]; P. Z. S. 1864, p. 373 [3]; 1868, p. 469 [4]; 1870, p. 838 [5]; Lawr. Ann. Lyc. N. Y. vii. p. 302 [6]; Richm. Pr. U. S. Nat. Mus. xvi. p. 530 [7]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 233 [8].

Plotus surinamensis, Gm. Syst. Nat. i. p. 581 [9].

Heliornis surinamensis, Sumichr. La Nat. v. p. 229 [10].

Brunneus, vix olivascens; tectricibus alarum dorso concoloribus, uropygio et supracaudalibus paullo rufescentioribus; primariis brunneis; rectricibus rigidis, nigris, albo terminatis; pileo et nucha nitide chalybeo-nigris; linea lata superciliari alba ad latera nuchæ producta; loris et gutture toto pure albis; regione parotica aurantiaco-rubra ad fasciam longitudinalem albam ad latera colli positam producta, inferius fascia lata chalybeo-nigra marginata; corpore reliquo subtus sordide albo, præpectore et corporis lateribus brunnescentibus, crisso saturatiore brunneo; subcaudalibus nigricantibus; subalaribus cinerascentibus, majoribus et axillaribus rufescenti-brunneis: rostro rubro, culmine nigro notato; mandibula alba, basin versus flavicante; pedibus flavis, nigro transfasciatis; iride grisescenti-brunnea. Long. tota circa 10·0, alæ 5·7, caudæ 3·0, culm. 1·2, tarsi 0·8. (Descr. feminæ adultæ ex Santana Mixtan. Mus. nostr.)

Hab. Mexico, Rio Coatzacoalcos (*Sumichrast* [10]); British Honduras, Belize River (*O. S.*), Belize, Rio Makal (*Blancaneaux* [8]); Guatemala [4], Santana Mixtan [2], Chiapam [8] (*O. S.*); Honduras, San Pedro (*Whitely* [5]); Nicaragua, Rio San Juan, Rio Escondido (*Richmond* [7]); Costa Rica (*Endres* [8]), Rio Frio (*Richmond* [7]); Panama, Lion Hill (*M'Leannan* [4 8]).—Colombia [8]; Ecuador [8]; Venezuela [8]; Guiana [8]; Amazons [8]; Brazil [8].

H. fulica appears to be locally distributed throughout Central America, and is apparently more plentiful in the southern part of its range. The only Mexican locality recorded for the species is the Coatzacoalcos River, where it was obtained by Sumichrast. In Guatemala Salvin found the species inhabiting the submerged swamps on the Pacific coast.

Like our Moor-hen, it has the habit, when pursued, of sinking its body below the surface of the water with the head only exposed, but as the bird always faces the object in pursuit, its white breast is readily seen, even when under water [7]. Nothing has been recorded of the nest and eggs, but the young are said to be hatched naked.

Suborder ALECTORIDES.

The members of this Suborder have schizorhinal nostrils, in which respect they differ from the Fulicariæ, the nostrils in the latter being holorhinal; and Mr. Lydekker further points out as osteological features that the angle of the mandible is always truncated and that the humerus never has an ectepicondylar process.

The Families included in the Alectorides are all very distinct and easily recognized. They consist of the Aramidæ, Eurypygidæ, Rhinochetidæ, Mesœnatidæ (Mesitidæ), Gruidæ, Psophiidæ, and Otididæ. Of these only one, viz. the Gruidæ, is found in both the Eastern and Western Hemispheres, the Otididæ, Mesœnatidæ, and Rhinochetidæ are purely Old-World forms, and the Psophiidæ, Eurypygidæ, and Aramidæ are Neotropical, with the exception that the latter extends to Florida in the Nearctic Region.

Fam. ARAMIDÆ.

The species of this Family have such a pronounced general resemblance to the Rails that it is somewhat remarkable to find that they belong to a different Suborder. The osteology and anatomy, however, leave no doubt upon this point. The palate is schizognathous, the nostrils holorhinal; there are twelve rectrices, and the sternum, like that of the Cranes, has no posterior notches. In the form of the bill the Aramidæ resemble the Rails, this organ being very long and curved, and having the nostrils perforated and linear, situated in a deep nasal groove, which extends for two-thirds of the length of the bill, while a very distinct groove runs along the sides of the mandible for two-thirds of its length. The first primary is sickle-shaped, narrowed and incised for the basal two-thirds and spatulate at the tip. The oil-gland is tufted.

The family includes but a single genus.

ARAMUS.

Aramus, Vieill. Analyse, p. 58 (1816); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 237 (1894).

The characters of the genus *Aramus* are the same as those of the family. Two species are known, viz., *A. pictus* of Southern Florida, Central America, and the West Indies, and *A. scolopaceus*, which inhabits Guiana, Venezuela, and Brazil.

In habits these birds resemble the Rails, and they affect similar localities. The nest, composed of rushes, is placed in a marsh, and the eggs are ten or twelve in number, of a dull white colour, with blotches of pale brown and purple.

1. Aramus pictus.

Tantalus pictus, Bartr. Trav. Florida, p. 291 [1].

Aramus pictus, Coues, Pr. Acad. Philad. 1875, p. 354 [2]; Nutting, Pr. U. S. Nat. Mus. v. p. 409 [3]; vi. pp. 389 [4], 396 [5]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 400 [6]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 238 [7].

Aramus scolopaceus, Moore, P. Z. S. 1859, p. 64 [8]; Sumichr. La Nat. v. p. 229 [9].

Aramus scolopaceus, var. *giganteus*, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 49 [10].

Aramus giganteus, Salv. Ibis, 1889, p. 378 [11]; 1890, p. 89 [12]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 177 [13]; Richm. op. cit. xvi. p. 528 [14]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 76 [15].

Aramus holostictus, Scl. & Salv. Ibis, 1859, p. 227 [16]; Salv. Ibis, 1870, p. 115 [17].

Brunneus, pilei plumis anguste, colli plumis latius albo striatis; dorsi plumis et tectricibus alarum maculis triquetris albis plus minusve celatis notatis; remigibus et rectricibus brunneis æneo nitentibus; loris et regione suboculari gulaque albis; corpore reliquo subtus brunneo, colli et gutturis imi plumis medialiter albo striolatis, pectoris et abdominis plumis latissime albo striatis, plumis singulis triquetrim albis, brunneo marginatis; corporis lateribus, tibiis et subcaudalibus brunneis concoloribus; subalaribus pectore concoloribus et eodem modo albo notatis: rostro viridescenti-flavo, apicem versus fusco; pedibus plumbeis, unguibus nigris; iride coryllina. Long. tota circa 26·0, alæ 12·9, caudæ 5·5, culm. 4·6, tarsi 4·9. (Descr. exempl. ad. ex Cozumel I. Mus. nostr.)

Hab. North America, Florida [15].—Mexico, Alvarado [9] and Uvero [9], Vera Cruz, Santa Efigenia [9 10] and Cacoprieto [9], Oaxaca (*Sumichrast*), Tlacotalpam [7], Santa Ana, Vera Cruz (*Ferrari-Perez* [13]), Cozumel I. (*Gaumer* [7 11 12]); British Honduras, Belize River (*Leyland* [8 16]); Honduras, Omoa (*Leyland* [8 16]); Nicaragua, Sucuyá and Omotépe, Lake of Nicaragua (*Nutting* [4 5]); Costa Rica [17] (*Carmiol* [7]), Rio Frio (*Richmond* [14]), La Palma, Gulf of Nicoya (*Nutting* [3]).—West Indies [7].

Our collectors have not sent us specimens of this curious bird from the mainland of Mexico, but both Ferrari-Perez [13] and Sumichrast [9] procured several in Vera Cruz, and the latter also found it in Oaxaca. Mr. Nutting [3] says that *A. pictus* prefers marshy country to open water, and that he often heard its harsh and rather mournful cry; he also states that the flesh is very good eating.

The bird is of heavy flight, and, when first flushed, flies with bent neck and hanging legs, but when once on the wing the former is stretched out to the full extent and the latter are extended behind after the manner of Herons. As a rule, the bird escapes pursuit by running, baffling even the best dogs; its long toes enable it to walk on the leaves of the water-plants and it is also a good swimmer. The nest, as observed in Florida, is composed of a large mass of rank weeds, with a depression in the middle. Like that of the Clapper-Rails, it is generally secured from inundation by being placed amongst, and fastened to, the large tufts of the tallest grasses which grow in the vicinity of the lagoons [6]. The eggs, sometimes as many as sixteen in number, are large for the size of the bird; they are of a rich cream-colour, with spots and blotches of yellowish-brown and underlying purple.

Fam. EURYPYGIDÆ.

Among the osteological characters which distinguish the Sun-Bitterns may be mentioned the absence of occipital foramina, basipterygoid processes, and supraorbital impressions, as well as the presence of a notch on each side of the posterior margin of the sternum. The rectrices are twelve in number, but there are only ten primaries present. The oil-gland is nude, and there are powder-down patches on the body. The bill is like that of a Rail, being a little longer than the head, the nostrils horizontal and pervious, but overhung by a slight opercular membrane, situated in a long groove which extends for nearly three-fourths of the length of the bill, while the lower mandible is grooved along the sides.

The nestlings and eggs somewhat resemble those of a *Scolopax*, and the former are covered with down and are fed by the parents for some weeks. Only one genus is known.

EURYPYGA.

Eurypyga, Illiger, Prodr. p. 257 (1811); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 240 (1894).

The generic characters have already been noticed under the family, and the species are readily distinguished by their peculiar colour. *E. helias* inhabits Brazil and extends to Bolivia, Guiana, and Venezuela, while *E. major* represents it in Central America, Colombia, and Ecuador.

1. Eurypyga major.

Eurypyga major, Hartl. Syst. Verz. Mus. Bremen, p. 108 [1]; Lawr. Ann. Lyc. N. Y. vii. p. 478 [2]; ix. p. 142 [3]; Scl. & Salv. P. Z. S. 1864, p. 371 [4]; Salv. Ibis, 1866, p. 205 [5]; P. Z. S. 1867, p. 161 [6]; 1870, p. 218 [7]; v. Frantz. J. f. Orn. 1869, p. 377 [8]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 131 [9]; Pr. U. S. Nat. Mus. viii. p. 113 [10]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 242 [11].

Eurypyga helias (nec Pallas), Scl. & Salv. Ibis, 1859, p. 227 [12]; Lawr. Ann. Lyc. N. Y. vii. p. 301 [13].

Griseo-brunnescens, nigro late transfasciata; dorso imo et supracaudalibus saturatius griseis, albo anguste transfasciatis; tectricibus alarum et ala spuria schistaceis, nigro fasciatis et maculis albis plus minusve celatis ornatis; remigibus variegatis, ad basin ochraceis griseo vermiculatis, primariis alternatim castaneis et nigris, fascia mediana et altera subterminali albis griseo marmoratis, apicibus nigris; tectricibus majoribus et secundariis plerisque ochraceis griseo marmoratis, pogonio externo basin versus castaneo, fascia lata nigra, apicibus cinereis, albido marmoratis, fascia terminali nigricante; rectricibus schistaceis, albido nigroque transvermiculatis, fascia duplici nigra, supra castanea angustius marginata ornatis; pileo et nucha, cum facie laterali, nigris, fascia angusta superciliari antice castanea, postice alba; fascia altera infraoculari alba; gula alba; genis anticis nigris, genis posticis et gutturis lateribus nigris anguste albo transvermiculatis; colli lateribus, præpectore et pectore summo sordide rufescentibus, nigro fasciatim transvermiculatis; corpore reliquo subtus pallide fulvescente, subcaudalibus magis cervinis, pectoris lateribus ochraceis fusco transfasciatis; subalaribus sordide plumbeis, medianis ochraceis; maxilla nigra,

mandibula ochracea; pedibus ochraceis; iride rubra. Long. tota circa 18·0, alæ 9·1, caudæ 6·4, culm. 2·45, tarsi 2·25.

♀ mari similis. Long. tota 16·5, alæ 8·5. (Descr. maris et feminæ ex San Emilio, Nicaragua. Mus. nostr.)

Hab. Guatemala (*Skinner* [5 12]), Vera Paz, mountains S.E. of Coban (*O. S. & F. D. G.* [11]); Costa Rica [10], Angostura [3], Machuca [8], Aguacate Mountains [8 9] (*v. Frantzius*), Valza (*Carmiol* [11]), Pozo Azul de Pirris, Monte Redondo (*Zeledon* [9]); Panama (*M'Leannan* [2 4 13]), Santa Fé [6 11], Cordillera de Tolé [6 11], Cordillera del Chucu [7 11], Southern slope of Volcan de Chiriqui [7 11] (*Arcé*).—Colombia [11]; Ecuador [11].

E. major is the Central-American representative of *E. helias*, and differs from that well-known species in its rather larger size, the less distinct superciliary streak, and the darker colour of the upper surface, which is more uniform and lacks the light brown bars so conspicuous in the southern bird; the throat and chest are darker and more uniformly rufous than in *E. helias*, not showing the black blotches which are a feature of the latter.

The present species appears to be more plentiful in Costa Rica than in Guatemala, where we only met with it on the mountains to the south-east of Coban.

Nothing has been recorded of its habits.

Fam. GRUIDÆ.

The Cranes constitute a well-marked family of the Alectorides, and are well-known to all ornithologists. They have a schizognathous palate and schizorhinal nostrils, with twelve rectrices and a tufted oil-gland. The sternum has no notches on the posterior margin, but the anterior end is perforated for the reception of the trachea, which has several convolutions. There are no powder-down patches. The bill is long and the nasal depression extends for rather more than half the length of the maxilla, the nostril being overhung by a superior membrane. One striking peculiarity of the Gruidæ is the great development of the secondaries into drooping ornamental plumes, while the head and neck are nearly bare in most of the species and somewhat brightly coloured.

The Cranes make a large nest, generally in forest-swamps, and the eggs, usually two in number, are olive-brown or grey, with brown and underlying purplish spots.

GRUS.

Grus, Pall. Misc. Zool. fasc. iv. p. 1 (1767); Sharpe, Cat. Birds Brit. Mus. xxiii. p. 249 (1894).
Limnogeranus, Sharpe, Bull. Brit. Orn. Club, i. p. xxxvii (1893); Cat. Birds Brit. Mus. xxiii. p. 259 (1894).

The family characters, as given above, distinguish the genus *Grus*. The extent of

feathering on the head and neck, and the different distribution of the plumes on these portions of the body, have been deemed by some recent writers to be of sufficient importance for the separation of many of the Cranes into distinct genera, but this division does not commend itself to us.

The genus is represented in the northern portions of both hemispheres during the summer, the species migrating south in winter. All the Cranes more or less resemble each other in habits.

1. Grus canadensis.

The Brown and Ash-coloured Crane, Edwards, Nat. Hist. Birds, iii. p. 133, t. 133 [1].

Ardea canadensis, Linn. Syst. Nat. i. p. 234 [2].

Grus canadensis, Dugès, La Nat. i. p. 142 [3]; Lawr. Mem. Bost. Soc. N. H. ii. p. 311 [4]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 407 [5]; Herrera, La Nat. (2) i. pp. 185 [6], 327 [7]; Sharpe, Cat. Birds Brit. Mus. xxiii. p. 256 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 75 [9].

Grus fraterculus, Boucard, P. Z. S. 1883, p. 461 [10].

Grus mexicana (nec Müll.), Jouy, Pr. U. S. Nat. Mus. xvi. p. 790 [11].

Schistacea, tectricibus alarum pallide ferrugineo marginatis; primariis nigris, extus pallido schistaceo lavatis, secundariis cineraceis, intimis longioribus, decompositis; cauda schistacea; pileo nudo rubescente, nucha et collo postico clare schistaceis, gutture et præpectore lætioribus; plumis subocularibus, genis et gutture albis; subtus schistacea: rostro et pedibus nigricantibus; iride coccinea. Long. tota circa 40·0, alæ 21·5, caudæ 7·2, culm. 6·2, tarsi 0·5. (Descr. maris adulti ex Tarpon Springs, Florida. Mus. nostr.)

♀ mari similis.

Hab. Arctic and Subarctic North America, breeding from the Fur Countries and Alaska to the Arctic Coast, migrating southward in winter into the Western United States [9].—Mexico, Mazatlan (*Grayson* [4]), San Luis Potosi (*Jouy* [11]), Guanajuato (*Dugès* [3]), Valley of Mexico (*Herrera* [6 7]), Tizimin, Yucatan (*Gaumer* [10]).

The Little Brown Crane visits Mexico in winter on migration, when it leaves its breeding-home in the high north. Grayson [4] says that it makes its appearance in Mazatlan in considerable numbers as early as the month of September, disappearing again before the end of March. Jouy writes [11] that this bird was numerous in winter time at the Hacienda Angostura in San Luis Potosi, frequenting the cultivated fields; it was often seen in large flocks circling high in the air, its loud cry being distinctly heard, even when the birds were almost out of sight. A single specimen was also shot at an "aguada" near Tizimin in March, and this was the only example observed by Dr. Gaumer in Yucatan [10].

G. canadensis arrives at its Arctic breeding-place in the early part of May, and is very plentiful in the marshy grounds which it affects. The nests are placed on dry knolls, but they sometimes consist merely of a large depression scooped out in the sand and lined with dry grass.

Only two eggs are laid, of the usual type, of a buff or olive-buff colour, with spots and blotches of brown distributed over the surface and markings of underlying pale purple.

2. Grus americana.

The Hooping Crane, Catesby, Nat. Hist. Carol. i. p. 75, t. 75 [1].
Ardea americana, Linn. Syst. Nat. i. p. 234 [2].
Grus americana, Dresser, Ibis, 1865, pp. 312 [3], 314 [4]; 1866, p. 30 [5]; Dugès, La Nat. i. p. 142 [6]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 790 [7]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 404 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 75 [9].
Limnogeranus americanus, Sharpe, Cat. Birds Brit. Mus. xxiii. p. 259 [10].

Alba; ala spuria, tectricibus primariorum primariisque nigris; capite, loris et genis nudis rufescentibus, his et fronte vibrissis rigidis nigris indutis; plaga nuchali triangulari schistaceo-nigra: rostro flavo; pedibus cærulescenti-nigris; iride flava. Long. tota circa 48·0, alæ 24·0, caudæ 8·5, culm. 5·4, tarsi 10·8. (Descr. avis adulti ex Brownsville, Texas. Mus. nostr.)

Hab. North America, from the Fur Countries to Florida, Texas, and Mexico, and from Ohio to Colorado [9].—Mexico, Matamoros (*Dresser* [3 4 5]), Guadalajara (*Dugès* [6]), Hacienda El Molino (*Jouy* [7]).

This fine species, known as the "Whooping Crane," is distinguished by its bare head, the cheeks being also naked like the crown, and having black bristles, but not feathered as in the typical members of the genus *Grus*: only the region below and behind the eye is feathered. It may also be recognized by its white plumage and yellow bill.

G. americana breeds in America, principally north of the 43rd parallel, also in the prairies of Central Illinois, Iowa, Minnesota, and Dakota, migrating south in winter [8]. Its range formerly extended to the Atlantic coast, occasionally as far north as New England [9].

The species occurs in Mexico during the winter season, but the records are very few. Mr. Dresser states that he saw two of these Cranes on his first visit to the lagoon of Matamoros in June 1860, and he subsequently observed a small flock of seven or eight [3 4 5]. Jouy remarks [7]:—"Several living specimens of this magnificent bird were kept at the Hacienda El Molino by Señor José Maria Negrete, as one of the attractions of his place. They were quite tame and walked freely about, guarded by an aged peon with a staff, whose sole duty it was to feed them, and drive them to and from their watering-place."

The habits of *G. americana* are very like those of *G. canadensis*, and it places its nest in similar localities. Two eggs are laid, which are described by Brewer [8] as of a deep greyish-white, washed with sepia, and marked sparsely, except at the larger end, with bold patches of dark rusty brown.

The Sandhill Crane (*Grus mexicana*), notwithstanding its specific name, does not appear to visit Mexico, and we have no evidence of its occurrence within our limits. It is a larger bird than *G. canadensis*, with a tarsus about ten inches in length. The range of *G. mexicana* is given in the 'A. O. U. Check-list' as the "Southern half of North America; now rare near the Atlantic coast, except in Georgia and Florida."

Order LIMICOLÆ.

This Order includes the Thick-knees or Stone-Plovers (Œdicnemidæ), Jacanas (Parridæ), Plovers (Charadriidæ), Sheath-bills (Chionididæ), Seed-Snipes (Thinocorythidæ), and the true Snipes and Sandpipers (Scolopacidæ). Of these six families the Chionididæ and Thinocorythidæ are not represented within the limits of the present work, the former having a subantarctic range, and the latter being purely South American. The Jacanas are found in the tropical and subtropical areas of the Old and New Worlds, and the remaining three families—the Œdicnemidæ, Charadriidæ, and Scolopacidæ—are practically cosmopolitan in their distribution.

The Limicolæ have a schizognathous palate and an aquintocubital wing, with the fifth secondary wanting. The nostrils are schizorhinal, excepting in the Œdicnemidæ, and there are many other anatomical and osteological features which are characteristic of the Order. The nestlings are covered with down, generally of a highly variegated pattern, and are able to run alone and feed themselves a short time after being hatched.

Fam. ŒDICNEMIDÆ.

The Stone-Plovers or Thick-knees have a schizognathous palate, but they differ from all the other Limicolæ in having holorhinal nostrils. In this respect these birds exhibit an affinity with the Bustards (Otididæ), a family restricted to the Old World. They even show a certain likeness to the smaller Bustards in appearance, but are inhabitants of the more open country, and they lay quite a different type of egg from that of the Otididæ, in this respect evincing a relationship with the Oyster-catchers.

In addition to several well-marked osteological features which distinguish the Œdicnemidæ, they possess other external characters which render them easily recognizable from ordinary Limicolæ. Like the Bustards they have a very large head, but the enormous yellow eye is also a distinguishing characteristic of the family. The swollen joint of the tarso-metatarsus, whence the Stone-Plovers derive their popular name of Thick-knees, is more in evidence in the young birds than in the adults. The toes show no trace of an interdigital web, the hallux is absent, and the claw of the middle toe is not pectinated. The tarsus is reticulated both before and behind.

The members of this family make no nest, but deposit their two eggs on bare and stony ground, so that the latter are very difficult to discover. The nestlings are not so variegated as those of the true Plovers or Snipes, but are densely clothed with down of a grey or sandy colour, admirably adapted to concealment in the surroundings in which they are hatched.

Four genera of Œdicnemidæ are recognized by ornithologists, only one of which, *Œdicnemus*, has any representatives in the New World. Here occur three species, viz., *Œ. bistriatus*, from Central and South America, *Œ. dominicensis*, from San Domingo, and *Œ. superciliaris*, from Peru.

ŒDICNEMUS.

Œdicnemus, Temm. Man. d'Orn. p. 321 (1815); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 3 (1896).

The characters of the genus are the same as those of the family.

1. Œdicnemus bistriatus.

Charadrius bistriatus, Wagler, Isis, 1829, p. 648[1].

Œdicnemus bistriatus, Gray, List Grallæ Brit. Mus. p. 59[2]; Owen, Ibis, 1861, p. 68[3]; Salv. t. c. p. 356[4]; Ibis, 1865, p. 198[5]; Scl. P. Z. S. 1865, p. 397[6]; v. Frantz. J. f. Orn. 1869, p. 378[7]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 45[8]; Sumichr. La Nat. v. p. 232[9]; Salvin, Cat. Strickl. Coll. p. 591[10]; Nutting, Pr. U. S. Nat. Mus. vi. p. 389[11]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 12[12]; Salvad. & Festa, Boll. Mus. Zool. Torino, xiv. no. 339, p. 12[13].

Œdicnemus sp., Taylor, Ibis, 1860, p. 314[14].

Supra nigro et rufo late striatus, plumis saturate brunneis, rufo marginatis; uropygio grisescente, plumis anguste brunneo medialiter striatis; pileo medio rufescente angustius brunneo striolato; pilei lateribus nigris, fasciam longitudinalem latam formantibus; regione oculari et supra-auriculari albis; facie laterali et collo undique rufescentibus, anguste brunneo striolatis; gutture et corpore subtus albis, jugulo imo et præpectore fulvescenti-rufis, anguste brunneo striolatis; pectore summo grisescente; subcaudalibus cervinis; tectricibus alarum magis grisescenti-brunneis, his et secundariis intimis rufo marginatis; remigibus ceteris saturate sepiariis, intus albis, secundariis basaliter albis, primario externo extus dimidiatim albo; rectricibus medianis grisescentibus, reliquis fere albis, nigro bi- vel trifasciatis et fascia lata nigricante terminatis; subalaribus et axillaribus albis. Long. tota circa 17·0, alæ 10·9, caudæ 4·9, culm. 2·2, tarsi 4·4.

♀ mari similis. Long. tota circa 17·0, alæ 9·7. (Descr. maris et feminæ ex Huamachal, Guatemala. Mus. nostr.)

Juv. adultis similis, sed supra magis marmoratus, plumis saturate brunneis undique rufo fimbriatis; hypochondriis griseo lavatis. (Descr. av. juv. ex San Gerónimo. Mus. nostr.)

Hab. Mexico (*Wagler*[1]), both coasts[9], Tapana[8] (*Sumichrast*), Vera Cruz (*Boucard*[6]), Misantla (*Ferrari-Perez*[12]), Tonala, Chiapas (*Richardson*[12]); Guatemala (*Constancia*[10], *O. S.*[4]), Huamachal (*O. S.*[5 12]), San Gerónimo (*Owen*[3], *O. S.*[12]); Honduras (*Taylor*[14]); Nicaragua, Sucuyá (*Nutting*[11]), San Juan del Norte (*v. Frantzius*[7]); Costa Rica, San José (*v. Frantzius*[7]); Panama (*Festa*[13]).—Colombia[12]; Venezuela[12]; Guiana[12]; Amazonia[12].

This species is found in suitable situations from Mexico to Panama, and extends

southward to the Rio Branco in Upper Amazonia. Its habits are somewhat similar to those of the Old-World *Œ. crepitans*. Near Huamachal in Guatemala, Salvin met with a considerable number of these birds, frequenting the grassy savanas between the lagoons. He used to see them every day, and on one occasion found a nest with a single egg. The birds cry out at night, after the manner of *Œ. crepitans*, and the notes of the two species are very similar [5].

Sumichrast met with *Œ. bistriatus* at Tapana, Tehuantepec, and says that it is very common on both coasts of Mexico [9]. In Honduras, George Cavendish Taylor found it inhabiting the plain between La Brea and Nacaome, as well as the open part of the plain of Comayagua [14]. Mr. Nutting says that in Nicaragua "this curious bird is gregarious, and lives in the pastures surrounding the haciendas, where it makes itself useful in eating the various insects that annoy and injure the cattle. On this account it is protected by the inhabitants of the country" [11].

Owen, writing on May 5th, 1861, observes:—"I have only been able to obtain one egg of this bird. Their nesting-time must have been long past, judging from the size of the young which may be seen on the plains. The egg closely resembles that of *Œ. crepitans*, being of a pale ochreous brown, spotted all over with shades of dark brown. It was deposited on the bare ground, the place chosen being slightly hollowed out, and at the foot of a straggling shrub which afforded a slight shade" [3].

Signor Festa procured a living specimen of this Thick-knee during his expedition to Panama, which he fed upon flesh, soaked bread, and maize. He remarks that the bird gave utterance at night-time to a most lamentable cry.

Fam. PARRIDÆ.

The Jacanas constitute a tropical family, which is found in both the Old and New Worlds. In America they are distributed over nearly the entire Neotropical Region, and one genus, *Asarcia*, extends into Southern Texas. It is represented in Africa, India, China, the Malay Archipelago, and Australia.

The Parridæ have, until recent years, been considered to belong to the Ralliformes, and their slender bodies, enormously long toes, armed with a straight spur-like claw, and their aquatic habits, afforded superficial evidence that they were Ralline birds. Subsequent investigation, however, has conclusively proved that the Jacanas are very aberrant Limicolæ, and as the Œdicnemidæ connect the great mass of the Plovers and Snipes with the Bustards, so do the Parridæ connect them with the Rails.

In addition to their remarkable external form, there are several anatomical characters which distinguish them from the true Plovers. The palate is schizognathous and basipterygoid processes are present; there are no occipital foramina, the dorsal vertebræ are opisthocœlous, and the spinal feather-tract is forked on the back.

The nest resembles that of the Water-hens, and is a floating mass of grass and reeds, and the eggs are thickly scrawled all over with black.

Of the seven genera known, two are American, one is Australian, two African, and two Asiatic.

PARRA.

Parra, Linn. Syst. Nat. i. p. 259 (1766).

Jacana, Schaeffer, Elem. Orn. fol. 2 B, t. 7. figs. 1, 2 (1774); Stejneger, Auk, ii. p. 338 (1885); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 81 (1896).

The genus *Parra* is distributed over a large part of South America, from Brazil and Argentina to Venezuela, Colombia, and Panama. It is distinguished from the other Jacanas by the form of the frontal lappet, which is flat and leaf-like, and has a single median indentation behind; there is a small pendent lappet at the angle of the mouth, and the wing is furnished with a very sharp and well-developed spur.

The Linnean name *Parra* has been so well known for more than a century as applying to these particular American Jacanas, that we cannot see the advisability of changing it to *Jacana*, as has been recently done.

1. Parra melanopygia.

Parra melanopygia, Scl. P. Z. S. 1856, p. 283 [1]; Scl. & Salv. P. Z. S. 1864, p. 372 [2]; Lawr. Ann. Lyc. N. Y. vii. p. 301 [3]; Salv. P. Z. S. 1867, p. 161 [4]; 1870, p. 218 [5].

Jacana melanopygia, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 84 [6].

Supra saturate vinaceo-castanea, supracaudalibus et tectricibus alarum sordidioribus, tectricibus reliquis nigris; remigibus pallide sulphureis, nigro terminaliter limbatis, secundariis longioribus externis purpurascenti-nigris, intimis castaneis dorso concoloribus vel medialiter nigricantibus; supracaudalibus et cauda purpurascenti-nigris; pileo et collo undique cum dorso summo et gastræo toto viridi-nigris, corporis lateribus vix castaneo lavatis; subalaribus nigris, intimis et axillaribus castaneo lavatis. Long. tota circa 8·5, alæ 4·7, caudæ 1·65, culm. 1·35, tarsi 2·45. (Descr. maris adulti ex Castillo, Veragua. Mus. nostr.)

Juv. Nigra, scapularibus et tectricibus alarum brunneis, his albido marginatis; pileo et striga postoculari nigris; supercilio lato et facie laterali albis vix flavo tinctis, gastræo toto albo; subalaribus et axillaribus nigris; cauda cuprescenti-brunnea; carunculis facialibus vix evidentibus aut nullis. (Descr. av. juv. ex Santa Fé, Veragua. Mus. nostr.)

Hab. Panama (*M'Leannan* [2 3]), Castillo [5 6], Santa Fé [4 6], Calobre [5 6] (*Arcé*).—Colombia, Santa Marta [1 6].

This is a northern representative of the common *Parra jacana* of Brazil, but has a darker and more maroon-coloured back, with some of the inner secondaries entirely purplish black; the under surface of the body is blackish, with the sides and inner under wing-coverts dark maroon, the outer ones and lower primary-coverts being black. The species was originally described by Dr. Sclater from Santa Marta, and has been since met with in the State of Panama by M'Leannan and Arcé.

2. Parra nigra.

Parra nigra, Gm. Syst. Nat. i. p. 708 [1]; Salvad. & Festa, Boll. Mus. Zool. Torino, xiv. no. 339, p. 12 (1899) [2].

Parra hypomelæna, Gray, Gen. Birds, iii. p. 589, t. 159 [3]; Scl. P. Z. S. 1856, pp. 143 [4], 283 [5]; Cass. Pr. Acad. Philad. 1860, p. 196 [6]; Salv. P. Z. S. 1870, p. 218 [7].

Jacana nigra, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 84 [8]; Bangs, Proc. N. Engl. Zool. Club, ii. p. 14 [9].

P. melanopygiæ similis, sed notæo omnino viridi-nigro; corpore subtus quoque cum subalaribus viridi-nigris. Long. tota circa 8·2, alæ 5·2, caudæ 1·75, culm. 1·3, tarsi 2·4. (Descr. av. adult. ex Calobre, Veragua. Mus. nostr.)

Juv. av. juv. *P. melanopygiæ* similis.

Hab. PANAMA, David (*Bridges* [4 5]), Calobre (*Arce* [7 8]), Lion Hill Station (*M'Leannan* [8], *Brown* [9]), Laguna de Pita (*Festa* [2]).—COLOMBIA [8]; VENEZUELA [8]; AMAZONIA [8].

This species is easily recognized by its greenish-black upper surface, with the innermost secondaries of the same colour as the back. In a few specimens a slight shade of purplish-brown or chestnut can be detected on the back, but the under surface of the body, including the under wing-coverts, is entirely black.

It ranges from Upper Amazonia to Colombia, entering our region in the State of Panama. Mr. W. S. Wood says that he noticed the species in open marshy places on the Rio Atrato late in December, 1857. It was shy and watchful, and two or three individuals were generally seen together on the ground, stretching out their wings, and often wading in the water.

ASARCIA.

Asarcia, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 86 (1896).

Asarcia differs from the foregoing genus in having no pendent lappet at the angle of the mouth, and the leaf-like lappet on the forehead has a double indentation behind.

A single species is known, which bears a great resemblance to *Parra melanopygia.* It is found only in Central America and the Greater Antilles.

1. Asarcia variabilis.

Parra variabilis, Linn. Syst. Nat. i. p. 260 [1].

Asarcia variabilis, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 86 [2]; Bangs, Auk, 1901, p. 358 [3].

Parra gymnostoma, Wagler, Isis, 1831, p. 517 [4]; Scl. P. Z. S. 1856, p. 283 [5]; 1857, p. 206 [6]; 1858, p. 360 [7]; 1859, p. 393 [8]; Moore, P. Z. S. 1859, p. 64 [9]; Scl. & Salv. Ibis, 1859, p. 231 [10]; Taylor, Ibis, 1860, p. 314 [11]; Lawr. Ann. Lyc. N. Y. viii. p. 184 [12]; Mem. Bost. Soc. N. H. ii. p. 312 [13]; Bull. U. S. Nat. Mus. no. 4, p. 50 [14]; v. Frantz. J. f. Orn. 1869, p. 375 [15]; Salv. Ibis, 1870, p. 116 [16]; P. Z. S. 1883, p. 428 [17]; Ibis, 1889, p. 379 [18]; 1890, p. 89 [19]; Finsch, Abh. naturw. Ver. Bremen, 1870, p. 363 [20]; Sumichr. La Nat. v. p. 229 [21]; Nutting, Pr. U. S. Nat. Mus. v. p. 409 [22]; vi. pp. 390 [23], 396 [24]; Boucard, P. Z. S. 1883, p. 462 [25].

Jacana gymnostoma, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 177 [26]; Ridgw. Pr. U. S. Nat. Mus. x. p. 584 [27]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 131 [28]; Stone, Pr. Acad. Philad. 1890, p. 204 [29].

Parra cordifera, Less. Rev. Zool. 1842, p. 135 [30]; Dugès, La Nat. i. p. 142 [31].

Parra violacea, Cory, Bull. Nutt. Orn. Club, vi. p. 130 [32].

Jacana violacea, Cory, Auk, v. p. 51 [33].

Jacana spinosa (nec L.), Elliot, Auk, v. p. 297 [34]; Richm. Proc. U. S. Nat. Mus. xvi. p. 530 [35]; Jouy, tom. cit. p. 790 [36]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 105 [37]; Chapman, Pr. U. S. Nat. Mus. xviii. p. 628 [38].

Supra saturate vinaceo-castanea, remigibus sulphureis apicem versus brunneo circumdatis vel fimbriatim terminatis, secundariis intimis dorso concoloribus; supracaudalibus et rectricibus saturatius castaneis, his medianis vix nigricantibus; pileo colloque undique cum interscapulio, gutture et pectore summo viridi-nigris; corpore reliquo subtus sordide vinaceo-castaneo, hypochondriis cum subalaribus et axillaribus paullo clarius castaneis, margine alari et primariorum tectricibus nigris: rostro cum caruncula frontali et calcario alari læte flavis; culminis basi cyanescenti-alba, frontis basi læte coccinea; pedibus grisescentibus; iride saturate brunnea. Long. tota circa 8·5, alæ 5·3, caudæ 2·0, culm. 1·3, tarsi 2·3. (Descr. maris adulti ex lacu Peten. Mus. nostr.)

♀ mari similis, vix major. Long. tota 8·5, alæ 5·2. (Descr. feminæ adultæ ex Huamachal. Mus. nostr.)

Juv. av. jun. specierum præcedenti similis.

Pull. Pulchre variegata; pileo cinnamomeo, lineis paucis nigris ornato; collo postico nigricante; dorso cinnamomeo, lineis duplicis, una nigra angusta, altera latiore ochracea, utrinque instructo; facie laterali et corpore subtus toto albis, fascia nigra supraparotica ad collum posticum nigrum extensa; ala cinnamomea ad apicem alba. (Descr. pulli ex Mexico. Mus. Brit.)

Hab. North America, Lower Rio Grande Valley, Texas [37].—Mexico (*Wagler* [4]), Mazatlan (*Kellett & Wood* [2 5], *Forrer* [2], *Grayson* [13], *Melchers* [20]), Manzanilla Bay, Rio Zacatula, Rio de Coahuayana (*Xantus* [13]), Guanajuato, Guadalajara (*Dugès* [31]), Zapotlan, Jalisco, Santiago de Tepic, San Blas (*Richardson* [2]), Acapulco (*Lesson* [30], *Markham* [17]), Tampico [2], Altamira, Tamaulipas (*Richardson* [2], *Armstrong* [38]), Lake Patzcuaro (*Jouy* [36]), Jalapa (*Sallé* [6]), Santa Ana (*Ferrari-Perez* [2]), Jonatal, Vera Cruz (*Trujillo* [2]), Laguna de Epatlan, Puebla (*Ferrari-Perez* [26]), Oaxaca (*Boucard* [8]), Cosamaloapam and Alvarado, Vera Cruz [21], Santa Efigenia and Zonatepec, Tehuantepec [14], Tonala, Chiapas [21] (*Sumichrast*), Teapa (*Mrs. H. H. Smith* [2]), Buctzotz [2], Yucatan [25] (*Gaumer*), Shkolak (*Stone & Baker* [29]), Cozumel Island (*Gaumer* [18 19]); British Honduras, Orange Walk, Belize River (*Blancaneaux* [2]); Guatemala, Santana Mixtan [10], Huamachal [2], Lake of Peten [2] (*O. S. & F. D. G.*), Lake of Amatitlan (*Wyke* [10]); Honduras (*Dyson* [2]), Belize, Peten, Omoa (*Leyland* [9 10]), Truxillo (*Townsend* [27]), Tigré Island and Lake of Yojoa (*Taylor* [7 11]); Nicaragua, Greytown (San Juan del Norte) (*Holland* [12], *v. Frantzius* [15], *Richmond* [35]), Escondido River [2 35], Momotombo [2] (*Richardson*), Sucuyá, Omotépe I., Lake of Nicaragua (*Nutting* [23 24]); Costa Rica (*Carmiol* [2]), Las Trojas, Alajuela, Siquirries (*Zeledon* [28]), Lake of Ochomogo, Salitral near San Antonio (*v. Frantzius* [15]), La Palma, Gulf of Nicoya (*Nutting* [22]); Panama, Divala (*Brown* [3]).—Antilles, Cuba [2], Puerto Rico [2], San Domingo [2].

This Jacana has a more extended range than the two species of the preceding genus, and is found throughout Central America from Mexico to Panama, and also occurs in Southern Texas, where it breeds. Grayson found it nesting in Tepic in Mexico [13]. *A. variabilis* is probably resident throughout the greater part of its Central-American range, having been recorded as breeding on the Escondido River in Nicaragua by Mr. Richmond [35], and by von Frantzius in Costa Rica [15].

The species appears to be quite common, though often very shy. Jouy, for instance, found it abundant on Lake Patzcuaro [36], and from the statement of Leyland that it was very common at Belize and on the Lake of Peten, but less so at Omoa, where it arrived about September, we may infer that the bird is a migrant to some of the more southern Republics. *A. variabilis* also inhabits the Greater Antilles, but the bird from Haiti, named by Mr. Cory *Parra violacea*, may prove to be specifically distinct.

In habits it is very active, running upon the leaves of the water-plants which fringe the margins of the lakes and rivers and often raising its wings. Grayson observes :—"I found a nest of this bird about the middle of June, in a lagoon near Tepic; it was placed upon the prostrate branch of a tree, just touching the water, in rather an exposed position, as there seemed to be no attempt at concealment. The nest is large and well formed, of coarse grass and water-moss, deep and rounded; the eggs, three in number, were fresh, of an oval form, with reddish blotches at the larger end, the shell very thin."

Fam. CHARADRIIDÆ.

This family embraces the Plovers, Sandpipers, and their allies, and is one of the most extensively represented of all the known groups of birds, being certainly the most cosmopolitan in range. Many species are resident within the tropical areas of both hemispheres; but a large number breed in the Arctic and sub-Arctic Regions, and migrate far to the south during the northern winter. In a lesser degree the southern species of Limicolæ migrate northwards towards the Equator during the southern winter.

The Charadriidæ have a palate of the most typical schizognathous pattern, and the nostrils are also typically schizorhinal. Basipterygoid processes are always present, and the dorsal vertebræ are opisthocœlous, but there are no lateral occipital fontanelles, as in the Parridæ. Otherwise in general characters the two families are remarkably similar, though so different in outward appearance and habits. The nestlings also are covered with down of a variegated pattern, and are able to run shortly after their escape from the egg. The nest is a poor structure, consisting generally of a mere depression in the ground, lined with a few twigs or grasses, and even this scanty lining is often absent. The eggs are mostly four in number, pear-shaped, and are generally placed in the nest point to point.

Subfam. *ARENARIINÆ.*

The Turnstones, composing this subfamily, are allied to the Plovers, and differ, like the latter, from the Sandpipers and Snipes in the form of the bill, in which the nasal groove does not extend beyond half the length of the culmen. In the Turnstones there is no "dertrum" or swelling at the end of the bill, such as occurs in the true Plovers, the toes have no connecting web, and the tarsus is scaled transversely in front and reticulated behind.

ARENARIA.

Arenaria, Brisson, Orn. v. p. 132 (1760); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 91 (1896).
Strepsilas, Illiger, Prodr. p. 263 (1811).

The characters of the genus *Arenaria* are the same as those of the subfamily, of which it is the sole representative.

Two species are known, one of which is exclusively Western American, viz. *Arenaria melanocephala*, breeding in Alaska and wintering in California, while the Common Turnstone, *A. interpres*, breeds in the north of both the Old and New Worlds, and migrates south in winter, at which season it is met with in Central America.

1. Arenaria interpres.

The Turnstone or Sea-Dottrel, Catesby, Nat. Hist. Carol. i. p. 72, t. 72 [1].
Tringa interpres, Linn. Syst. Nat. i. p. 248 [2].
Arenaria interpres, Vieill. Nouv. Dict. d'Hist. Nat. xxxiv. p. 345 [3]; Stejneger, Auk, i. p. 229 [4]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 129 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 103 [6]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 92 [7].
Strepsilas interpres, Illiger, Prodr. p. 263 [8]; Salv. Ibis, 1864, p. 385 [9]; 1865, p. 191 [10]; 1866, p. 198 [11]; 1889, p. 379 [12]; Lawr. Mem. Bost. Soc. N. H. ii. p. 308 [13]; Bull. U. S. Nat. Mus. no. 4, p. 46 [14]; Sumichr. La Nat. v. p. 232 [15]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 119 [16].

Ptil. hiem. Brunnea, plumis singulis pallidiore brunneo marginatis; scapularibus longioribus quibusdam et tectricibus minimis intimis albis, fasciam longitudinalem albam formantibus; alis brunneis, tectricibus majoribus albo terminatis; remigibus brunneis, intus albis, primariis interioribus extus quoque ad basin albis, secundariis albis, ad apicem brunneo maculatis, intimis tamen dorso concoloribus; dorso postico et uropygio pure albis; supracaudalibus nigris, longioribus albis; rectricibus basaliter albis, terminaliter brunneis ad apicem albis; pileo brunneo, plumis singulis saturatiore brunneo medialiter notatis; loris et facie laterali albidis, genis et regione suboculari brunneo notatis; regione parotica brunnea; gastræo toto cum subalaribus et axillaribus pure albis; præpectore et pectoris summi lateribus late nigricanti-brunneo marmoratis, plumis singulis brunneo terminatis: rostro nigro; pedibus saturate aurantiacis; iride coryllina. Long. tota circa 7·8, alæ 5·9, caudæ 2·3, culm. 1·05, tarsi 1·1. (Descr. maris adulti ex Chiapam. Mus. nostr.)

Ptil. æstiv. Supra rufo nigroque pulchre variegata, pileo et colli lateribus albis, illo postico nigro striolato; loris albis, fascia angusta frontali nigra ad plagam nigram infraocularem conjuncta; gutturis lateribus, præpectore et pectore laterali superiore nigris; gutture et corpore reliquo subtus pure albis. Long. tota 8·1, alæ 5·6, caudæ 2·2, culm. 0·9, tarsi 1·05. (Descr. maris adulti ex Turneff Land, Brit. Honduras. Mus. nostr.)

♀ *ptil. æstiv.* mari similis, sed haud ita rufo variegata. Long. tota circa 8·5, alæ 5·7. (Descr. feminæ adultæ ex Paracas Bay, Peru. Mus. nostr.)

Hab. Arctic Regions of North America, from Greenland to Alaska, breeding in the extreme north [6].—Mexico, Rio Zacatula (*Xantus* [13 16]), San Mateo [14], Santa Maria del Mar, Tehuantepec, Tonala, Chiapas (*Sumichrast* [15]), Mugeres I.[7], Cozumel I.[7 12] (*Gaumer*); British Honduras, Curlew Cay [9], Saw-pit Cay [7], Turneff I. [7] (*O. S.*); Guatemala, both coasts [11], Chiapam [7 10] (*O. S.*); Costa Rica, Las Trojas (*Zeledon* [5]); Panama, Veragua (*Arcé* [7]).—South America, both coasts in winter [7]; Antilles, in winter [7].—Northern Europe and Northern Asia, ranging to the southern hemisphere in winter [7].

The description of the winter plumage of this species is here given in particular, as the Turnstone is chiefly a visitor at this season to Central America. On its return journey in spring the bird is generally found to have assumed its summer livery, either partially or in full, the adult female never gaining such a complete rufous plumage as the male.

A. interpres is an inhabitant of the arctic regions of both hemispheres during the breeding-season, and there is scarcely a country in the southern areas of the globe which it does not visit on migration, mostly keeping to the sea-shore. Although sometimes seen in flocks, this bird is more often to be found alone on its return journey to the south, when it frequents the beaches of natural harbours, feeding on the small crustacea and such mollusca as it is able to obtain by breaking the shell. The species has acquired the name of "Turnstone" from the habit of turning over stones in order to get at the small animals beneath them. It has a peculiar piping note, and is not so shy as many of the other wading-birds.

Subfam. *HÆMATOPODINÆ.*

The Oyster-catchers constitute a very well-defined group of the Plovers, somewhat allied to the Turnstones, but distinct in all their chief external features. Like the Arenariinæ, they have no dertral swelling at the end of the upper mandible, and the tarsus is reticulated both before and behind. The bill is long and narrow, very much compressed, and having the angle of the genys situated far back, near to the base of the bill.

This subfamily includes but a single genus, *Hæmatopus*. Twelve species are known, four of which are almost entirely black: these are inhabitants of the southern hemispheres. The others have the breast and abdomen white, and are distinguished as the "Pied" Oyster-catchers. To this group belong *H. ostralegus* and its allies of the Old World, represented by the two white-bellied species which occur within the limits of the present work.

They make no nest, but lay their eggs on the sand, on the sea-shore, or on the banks of rivers.

HÆMATOPUS.

Hæmatopus, Linn. Syst. Nat. i. p. 257 (1766); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 105 (1896).

The characters of this genus are given above under the subfamily.

1. Hæmatopus palliatus.

The Oyster-catcher, Catesby, Nat. Hist. Carolina, i. p. 85, t. 85 [1].

Hæmatopus palliatus, Temm. Man. d'Orn. ii. p. 532 [2]; Scl. & Salv. Ibis, 1859, p. 228 [3]; Salv. Ibis, 1865, p. 190 [4]; 1889, p. 379 [5]; Lawr. Ann. Lyc. N. Y. ix. pp. 141 [6], 210 [7]; Mem. Bost. Soc. N. H. ii. p. 308 [8]; Bull. U. S. Nat. Mus. no. 4, p. 46 [9]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 284 [10]; Sumichr. La Nat. v. p. 232 [11]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 112 [12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 104 [13]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 114 [14]; Elliot, N. Amer. Shore-Birds, p. 209 [15]; Nelson, N. Amer. Fauna, no. 14, p. 34 [16].

Hæmatopus brasiliensis, Licht. Verz. Doubl. p. 73 [17]; Preis-Verz. Mex. Vög. p. 3 [18]; Cab. J. f. Orn. 1863, p. 59 [19].

Brunneus, uropygii lateribus et supracaudalibus pure albis; alis brunneis; tectricibus majoribus pure albis ad basin saturate brunneis; secundariis albis, intimis brunneis dorso concoloribus; primariis quinque externis sepiariis, proximorum rhachide medialiter alba; rectricibus sepiariis, ad basin albis; capite colloque undique nigris; corpore reliquo subtus pure albo: rostro miniato; pedibus pallide carneis; iride læte flava, palpebris miniatis. Long. tota circa 17·5, alæ 10·5, caudæ 4·2, culm. 3·7, tarsi 2·4. (Descr. maris adulti ex Chiapam. Mus. nostr.)

♀ mari similis.

Juv. adulto similis, sed plumis rufo marginatis distinguendus.

Hab. North America, sea-coasts of Temperate and Tropical sub-regions, occasional or accidental on the Atlantic coast north to Massachusetts and Grand Menan [13].—Mexico (*Deppe & Schiede* [18 19]), Tres Marias Is. (*Grayson* [8 10]), Mazatlan (*Grayson* [8], *Bischoff* [8]), Rio Zacatula (*Xantus* [8]), Isabella I. (*Grayson* [8]), Tehuantepec [11], Tonala [11], Santa Maria del Mar [11], San Mateo [9], San Francisco [9] (*Sumichrast*), Merida, N. Yucatan (*Schott* [7]), Cozumel I. (*Gaumer* [5 14]); Guatemala, Pacific coast, Nagualate [3], Chiapam [4 14] (*O. S.*); Costa Rica (*Dow* [6]), Bahia de Salinas (*Mus. Nac. de Costa Rica, teste Underwood*); Panama, Veragua (*Arcé* [14]).—South America, eastern coast to Brazil [14]; West Indies [14].

The American Oyster-catcher is found on both coasts of North and Central America, but we have not seen a specimen from the west coast of the southern continent. An example obtained by Mr. Rogers in Santa Catarina, Brazil, is in our collection, and the species probably migrates through the West-Indian Islands along the whole of the eastern coast of South America.

Grayson [10] says that it is common on the western coast of Mexico, being sometimes seen in flocks, and breeding both on the mainland and on the Tres Marias Islands. It must be noted, however, that Dr. Bowdler Sharpe, in the 'Catalogue of Birds,' identifies a specimen from the last-named locality as *H. frazari*; and Mr. Nelson [15], while

referring the Tres Marias birds to *H. palliatus*, which he considers to be "resident along the coast and adjacent islands south of Lower California," notices that some specimens shot out of the same flock were typical *H. palliatus*, while others had the upper part of the breast mixed with black and white as in *H. frazari*. He thinks also that "a series from the southern end of California will probably show intergradation between *H. palliatus* and *H. frazari*"[15]. Several of the examples in the British Museum also appear to us to be intermediate. Salvin noticed Oyster-catchers at Nagualate on the Pacific coast of Guatemala, which were probably of the present species, and he procured a specimen of the true *H. palliatus* at Chiapam.

The habits of *H. palliatus* are similar to those of *H. ostralegus*, but it appears to be more strictly a bird of the sea-shore, and does not, like the latter, ascend rivers for the purposes of nesting. It is shy and wary, and utters a piping note when alarmed or calling to its mates at night. During the season of migration it occurs in flocks, and the birds perform some pretty aerial evolutions in company. No nest is made, three eggs of a creamy-buff colour, blotched with dark brown, being deposited in a small depression in the sand, or among stones, their resemblance to which protects them from observation[15].

2. Hæmatopus frazari.

Hæmatopus frazari, Brewster, Auk, v. p. 84[1]; Townsend, Proc. U. S. Nat. Mus. xiii. p. 138[2]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 117[3]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 105[4]; Elliot, N. Amer. Shore-Birds, p. 210, cum fig.[5]; Nelson, N. Amer. Fauna, no. 14, p. 34[6].

H. palliato similis, sed saturatior, et pectore summo albo, nigro maculato distinguendus. Long. tota circa 17·0, alæ 10·4, caudæ 3·8, culm. 3·15, tarsi 2·15. (Descr. feminæ adultæ ex Ins. "Tres Marias" dictis. Mus. nostr.)

Hab. Lower California, both coasts, north to Los Coronados Islands[4], Carmen I.[1].—W. Mexico, Tres Marias Is. (*Forrer*[3], *Nelson*[6]).—Peru[3], Chile[3].

This race of *H. palliatus* is confined to the western coast of America. It was originally described by Mr. Brewster from Carmen Island in the Gulf of California.

In outward appearance *H. frazari* is similar to *H. palliatus*, but is of a much darker brown on the back, and the inner primaries show no white. The fore-neck is white, mottled with black spots, and the black throat is not so sharply defined. A specimen from the Zacatula River, referred to *H. palliatus*, though agreeing with the typical form as regards the wing-marking, is darker above and has a mottled chest as in *H. frazari*, and is apparently intermediate between the two.

Subfam. *LOBIVANELLINÆ.*

All the members of this subfamily have a swollen tip to their bill, as in the true Plovers, and in this respect they differ at once from the Oyster-catchers and Turnstones. The pattern of the scaling on the tarsus is also another well-marked characteristic, the scales being transverse on the front and reticulate on the hinder aspect.

Most of the species are armed with a spur on the wing and have generally some facial wattles. The majority of them belong to the Old World, and but three genera, *Oreophilus*, *Ptiloscelis*, and *Hoploxypterus*, are found in the Western Hemisphere, the last-mentioned alone claiming consideration in the present work.

HOPLOXYPTERUS.

Hoploxypterus, Bp. C. R. xliii. p. 418 (1856); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 135 (1896).

The single representative of this genus of Spur-winged Plovers has generally been placed in the genus *Hoplopterus*, which embraces three well-known species of the Old World. The American *H. cayanus*, according to Dr. Bowdler Sharpe's latest arrangement, should be placed in the Lobivanellinæ, whereas *Hoplopterus* belongs to the true Plovers, Charadriinæ.

In addition to the transverse scaling of the front of the tarsus, which is very long, being nearly double the length of the middle toe and claw, the hind toe is absent, there is no facial wattle or lappet, and only a small spur on the wing.

One species only is known, *H. cayanus*, which is found in Guiana and Brazil and is believed to have been met with in Honduras.

1. Hoploxypterus cayanus.

Pluvier armé, de Cayenne, D'Aubent. Pl. Enl. ix. t. 833[1].

Charadrius cayanus, Lath. Ind. Orn. ii. p. 749[2].

Hoplopterus cayanus, Moore, P. Z. S. 1859, p. 63[3]; Scl. & Salv. Ibis, 1859, p. 228[4].

Hoploxypterus cayanus, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 135[5]; Forbes & Robinson, Bull. Liverp. Mus. ii. p. 63[6].

Brunneus, interscapulio summo et scapularibus quibusdam nigris, reliquis albis; fascia utrinque interscapulari alba; uropygio, supracaudalibus et cauda basali pure albis, rectricibus nigricanti-brunneo late terminaliter fasciatis; alis brunneis, tectricibus majoribus albis; primariis nigricantibus, ad basin albis; secundariis albis extimis nigro terminatis, intimis dorso concoloribus; fronte et vertice antico cum loris, supercilio et facie laterali nigris ad collum posticum et lateralem et ad torquem præpectoralem conjunctis; plaga occipitali brunnea, late albo circumdata; corpore subtus reliquo pure albo: rostro nigricante, mandibula basin versus carnea; calcario alari grisescenti-brunneo; iride coryllina, palpebris rubris. Long. tota circa 8·0, alæ 5·4, caudæ 2·3, culm. 1·15, tarsi 1·75.

♀ mari similis. Long. tota circa 9·5, alæ 5·6. (Descr. maris et feminæ adultæ ex Guiana Brit. Mus. nostr.)

Hab. Honduras, Aloor (Ulua) River (*Leyland*[3 4]).—British Guiana; Amazonia; Brazil; Ecuador[5].

This pretty little Plover is said to have been obtained in Honduras by Leyland, part of whose collection passed into the Derby Museum at Liverpool. In the Catalogue of Charadriidæ in that Museum, by Dr. H. O. Forbes and Mr. Herbert Robinson, we are informed that Leyland's localities are not always to be trusted, as occasionally specimens from other countries were mixed up with the collections he brought from Honduras. No examples of *H. cayanus* from the latter place are in the Liverpool Museum, but, since Mr. Moore gave the "Aloor River" as the place where Leyland obtained the species, we do not feel justified in rejecting the evidence entirely, though the bird has not been met with by any subsequent collector.

H. cayanus appears to have the habits of a Sand-Plover and to be found on the inland rivers throughout the wide area it inhabits in South America.

Subfam. *CHARADRIINÆ.*

The true Plovers and Lapwings differ from the members of the foregoing subfamily in having the tarsus reticulated both before and behind, or covered with small hexagonal scales. The range of these birds is world-wide, and the majority of Plovers are included in the Charadriinæ, a great number being resident within the tropics. On the other hand, some species, like the Grey and the Golden Plovers, nest in the extreme north of both hemispheres, and migrate in winter to the most southern lands.

SQUATAROLA.

Squatarola, Leach, Syst. Cat. Mamm. & Birds Brit. Mus. p. 29 (1816); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 182 (1896).

The Grey Plover, the sole representative of the genus *Squatarola*, is closely allied to the Golden Plovers (*Charadrius*), and in the young plumage is actually spangled with golden-yellow like the latter. It is to be recognized, however, by the presence of the hind toe. The members of both genera assume a beautiful and distinct breeding-plumage in the summer, when the underparts become black.

1. Squatarola helvetica.

The Grey Plover, Albin, Nat. Hist. Birds, i. p. 72, t. 76 [1].
Le Vanneau de Suisse, Briss. Orn. v. p. 106, t. 10. fig. 1 [2].
Tringa helvetica, Linn. Syst. Nat. i. p. 250 [3].
Squatarola helvetica, Brehm, Vög. Deutschl. p. 554 [4]; Scl. P. Z. S. 1864, p. 178 [5]; Salv. Ibis, 1865, p. 190 [6]; 1866, p. 196 [7]; Lawr. Ann. Lyc. N. Y. ix. p. 210 [8]; Mem. Bost. Soc. N. H. ii. p. 307 [9]; Bull. U. S. Nat. Mus. no. 4, p. 46 [10]; Sumichr. La Nat. v. p. 232 [11]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 132 [12]; Sharpe, Cat. Birds Brit. Mus. xxvi. p. 182 [13].
Charadrius squatarola, Naum. Vög. Deutschl. vii. p. 250 [14]; Herrera, La Nat. (2) i. pp. 188 [15], 330 [16]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 99 [17]; Elliot, N. Amer. Shore-Birds, p. 165, t. 53 [18].

Ptil. hiem. Brunnea, albo variegata, plumis plerisque albo maculatis vel indentatis; supracaudalibus albis; cauda alba, brunneo transfasciata; alis brunneis, tectricibus albo maculatis, majoribus extus late albo marginatis; remigibus sepiariis, intus albis, primariorum rhachide alba, primariis interioribus albo quoque extus notatis; secundariis brunneis, basaliter albis; pileo brunneo, plumis singulis vix albido fimbriatis; loris et supercilio indistincto albis; regione parotica brunnea; genis albis, anguste brunneo striatis; corpore subtus toto albo, gutture imo anguste brunneo striolato; pectoris lateribus brunneo marmoratis; subalaribus albis; axillaribus nigris; tectricibus primariorum inferioribus griseis: rostro et pedibus nigris; iride brunnea. Long. tota circa 10·0, alæ 7·2, caudæ 2·65, culm. 1·3, tarsi 1·75 (Descr. avis adultæ ex Chiapam. Mus. nostr.)

Ptil. æstiv. Supra nigro et albo variegata et fasciata; fronte et supercilio lato, plaga præpectorali magna, abdomine imo et subcaudalibus pure albis; corpore reliquo subtus nigro. Long. tota circa 10·0, alæ 8·1. (Descr. maris adulti ex Kodiak, Alaska. Mus. nostr.)

Hab. North America, nesting in the tundras of the Arctic Regions, migrating south in winter [13].—Mexico, Mazatlan (*Grayson* [9]), Valley of Mexico (*Herrera* [15 16]), city of Mexico (*White* [5 13]), San Mateo, Tehuantepec (*Sumichrast* [10]), Merida, N. Yucatan (*Schott* [8]); Guatemala, Chiapam, Pacific coast (*O. S.* [6 7 13]).—South America in winter.—Northern Europe and Siberia in summer, migrating south in winter [13].

The Grey Plover, as this bird is called in England, is only a winter visitor to Central America, when it migrates along both coasts on its journeys to and from the Arctic Regions. It also wanders inland, and has been observed occasionally on the Mississippi River in large flocks, and, according to Herrera [15], passes through the Valley of Mexico on migration.

In winter *S. helvetica* travels generally along the coast to the extreme south of both continents, migrating either singly or in family-parties, returning generally with the black breast of the nuptial plumage partially or fully developed.

The species is very shy, both in its breeding-haunts and on migration. Its food on the sea-shore consists of small crustacea, but during the nesting-season it devours berries and locusts, and is said then to be very palatable as food.

CHARADRIUS.

Charadrius, Linn. Syst. Nat. i. p. 253 (1766); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 191 (1896).

Charadrius, as at present restricted, includes the Golden Plovers, which differ from *Squatarola* chiefly by the absence of the hind toe. It resembles the latter genus in having a black breast during the breeding-season, and is remarkable for its spangled golden plumage. The species are not so distinctly Arctic in their choice of nesting-quarters, since they breed in the northern temperate zones, as well as in the tundras of the north.

Three species are recognized, two belonging to the Old World and one to America in general.

1. Charadrius dominicus.

Le Pluvier doré de S. Domingue, Briss. Orn. v. p. 48, t. 6. fig. 1 [1].

Charadrius dominicus, P. L. S. Müll. Syst. Nat. Anhang, p. 116 [2]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 139 [3]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 178 [4]; Cherrie, Auk, 1892, p. 329 [5]; A. O. U. Check-list N. Amer. Birds, 2nd ed. p. 99 [6]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 195 [7].

Charadrius virginicus, Licht. Verz. Doubl. p. 70 [8]; Scl. P. Z. S. 1859, p. 369 [9]; Scl. & Salv. Ibis, 1859, p. 227 [10]; Lawr. Ann. Lyc. N. York, ix. p. 141 [11]; v. Frantz. J. f. Orn. 1869, p. 378 [12].

Charadrius hypomelas, Wagler, Isis, 1831, p. 520 [13].

Ptil. hiem. Ptilosi æstivæ *Squatarolæ helveticæ* similis, sed notæo aureo-flavo maculato, gastræo brunneo lavato, et axillaribus fumoso-brunneis semper distinguendus: rostro saturate olivaceo; pedibus plumbeis; iride saturate brunnea. Long. tota circa 9·5, alæ 7·3, caudæ 2·6, culm. 1·2, tarsi 1·75. (Descr. feminæ adultæ ex Guatemala. Mus. Brit.)

Ptil. æstiv. notæo aureo-flavo maculato; facie laterali et corpore subtus nigris; fronte, supercilio et colli lateribus conspicue albis. Long. tota circa 9·5, alæ 7·0. (Descr. feminæ adultæ ex Alaska. Mus. nostr.)

Hab. Arctic America, except coast of Bering Sea, migrating as far south as Patagonia [6]. —Mexico [13], Jalapa (*de Oca* [9]), Huertas de San Javier, Puebla, Nativitas, Tlaxcala (*Ferrari-Perez* [4]); Guatemala [7], Dueñas (*O. S.* [7 10]); Costa Rica (*Carmiol* [11]), San José (*v. Frantzius* [12], *Cherrie* [5]).—South America generally in winter [7]; Trinidad [7]; West Indies [7].

This species occurs in our region as a migrant, passing either to its breeding-grounds in the Arctic Regions, or on its return journey to its winter-quarters in the southern continent. It is much smaller than the Grey Plover, and is always to be recognized by its smoky-grey axillaries. Dr. Bowdler Sharpe [7] considers the American Golden Plover to be identical with *C. fulvus* of the Old World, but there are slight differences in size and in the proportions of the quills, which have induced some naturalists to treat them as separate races.

Ferrari-Perez [4] noticed *C. dominicus* in the State of Puebla in March, and in Tlaxcala in October. Salvin [10] records that a few of these birds appeared about the second week in April (in 1858) at Dueñas, where they frequented the open pasture-land, and were always found in company with a flock of Bartram's Sandpiper. In Costa Rica, Mr. Cherrie [5] says that the species was never common at San José, but a few individuals were seen between October 20th and December 15th.

This Plover is found during migration in many of the West-Indian Islands and travels as far south as Patagonia, visiting nearly every portion of the South-American continent. Its habits are similar to those of *Squatarola helvetica.*

APHRIZA.

Aphriza, Audubon, Syn. Birds Amer. p. 225 (1839); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 208 (1896).

This genus contains but a single species, which, from its form and general appearance,

was for many years classed with the Turnstones (*Arenaria*). Dr. Shufeldt, however, proved, from an examination of the skeleton, that *Aphriza* should be placed among the Plovers (*cf.* Journ. Morph. ii. pp. 311–340, t. 25), an arrangement which has since been followed.

There is very little difference between the summer and winter plumages in this genus. The bill is stout, with the culmen about equal in length to the middle toe and claw, so that *Aphriza* is nearly allied to *Ochthodromus*, but differs from it in the presence of a hind toe.

1. Aphriza virgata.

Streaked Sandpiper, Lath. Gen. Syn. iii. pt. 1, p. 180[1].
Boreal Sandpiper, Lath. l. c. p. 181[2].
Tringa virgata, Gm. Syst. Nat. i. p. 674[3].
Aphriza virgata, Gray, Gen. Birds, i. p. 548[4]; Lawr. Mem. Bost. Soc. N. H. ii. p. 307[5]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 126[6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 103[7]; Elliot, N. Amer. Shore-Birds, p. 197[8]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 208[9].

Ptil. hiem. Saturate cinereo-brunnea, plumis vix medialiter fuscescentioribus; tectricibus primariorum et tectricibus alarum majoribus late albo terminatis; primariis saturate brunneis, ad basin albis, rhachidibus albis; secundariis extimis brunneis, albo terminaliter marginatis et basin versus pogonii interni plus minusve albis, secundariis reliquis fere albis, brunneo medialiter notatis, intimis longissimis omnino brunneis; supracaudalibus albis; rectricibus saturate brunneis, fere dimidiatim basaliter albis, terminaliter albo fimbriatis; facie laterali cinereo-brunnea, fascia superciliari alba obsoleta; gula alba; gutture imo et præpectore cinereo-brunneis, albo marmoratis; pectore et abdomine albis, maculis cordiformibus nigris ornatis; subalaribus et axillaribus pure albis: rostro nigro; pedibus olivaceo-viridibus; iride nigra. Long. tota circa 10·0, alæ 6·6, caudæ 2·6, culm. 1·2, tarsi 1·2. (Descr. maris adulti ex Van Island. Mus. nostr.)

Ad. ptil. æstiv. Supra brunnea, plumis medialiter nigris, et maculis rufis marmorata; pileo et collo nigris albo striolatis; facie laterali gulaque albis, nigro maculatim striatis; corpore reliquo subtus albo, nigro fasciatim vel guttatim notato. Long. tota circa 9·5, alæ 6·6, caudæ 2·3, culm. 1·1, tarsi 1·15.

♀ *ad.* vix a mari distinguenda, sed notæo minus rufo notato. Long. tota 10·0, alæ 7·2. (Descr. maris adulti et feminæ ex Taguina Bay, Oregon. Mus. Brit.)

Hab. North America, Pacific coast from Alaska to California. — Mexico, Colima (*Xantus*[5]).—Peru[9]; Chile[9].

The Surf-bird, as it is called in North America, is nowhere common, and very little is known of its habits, which seem, however, to resemble those of the Turnstones. It has been found in Alaska, frequenting the mud-flats, and doubtless breeds on the shores of the extreme north-west of America[8]. In winter specimens have been procured on the coasts of Peru and Chile, as well as in Colima, in Western Mexico, so that it is probable that the species occurs along the whole of the western coast of Central America during migration.

Aphriza virgata is entirely a bird of the sea-coast; the nest and eggs have not yet been discovered.

OCHTHODROMUS.

Ochthodromus, Reichenbach, Av. Syst. Nat. p. xviii (1852); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 209 (1896).

In the shortness of its bill this genus resembles *Aphriza*, but differs from it in wanting the hind toe. In appearance the species of *Ochthodromus* are very similar to the Sand-Plovers (*Ægialitis*), but are distinguished from the latter by their heavy bill.

Eight species are recognized, of which two are resident in Australia and New Zealand, and the other six breed in the temperate regions of the north, and migrate south in winter. One of them, *O. wilsoni*, is peculiar to the New World.

1. Ochthodromus wilsoni.

Charadrius wilsonii, Ord, in Wilson's Amer. Orn. ix. p. 77, t. 73. fig. 5 [1]; Seebohm, Geogr. Distr. Charadr. p. 154 [2].

Ægialitis wilsoni, Salv. Ibis, 1889, p. 379 [3].

Ochthodromus wilsoni, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 214 [4]; Oates, Cat. Eggs Brit. Mus. ii. p. 19 [5].

Ægialitis wilsonianus, Salv. Ibis, 1864, p. 387 [6]; 1865, p. 191 [7]; 1866, p. 197 [8].

Ægialitis wilsonia, Lawr. Mem. Bost. Soc. N. H. ii. p. 307 [9]; Herrera, La Nat. (2) i. pp. 186 [10], 328 [11]; Elliot, N. Amer. Shore-Birds, p. 192 [12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 102 [13].

Ochthodromus wilsonius, Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 168 [14].

Supra brunneus, fronte et plumis supraocularibus albis; fascia transversa postfrontali nigra; loris nigris; facie laterali brunnea; gutture et colli lateribus cum corpore subtus albis, fascia præpectorali nigra; pectoris summi lateribus brunneis; alis brunneis, tectricibus alarum majoribus albo terminatis; remigibus sepiariis, intus basin versus albis et anguste albo terminaliter fimbriatis; secundariis longissimis intimis brunneis; supracaudalibus brunneis, lateralibus albis; rectricibus saturate brunneis, duabus extimis albis intus fumoso-brunneo adumbratis: rostro nigro; pedibus pallide carneis; iride brunnea. Long. tota circa 6·5, alæ 4·5, caudæ 1·6, culm. 0·8, tarsi 1·15.

♀ mari similis, sed torque præpectorali brunneo nec nigro distinguendus. Long. tota circa 7·0, alæ 4·7. (Descr. maris et feminæ ex Grassy Cay, British Honduras. Mus nostr.)

♂ *ptil. hiem.* ptilosi æstivæ similis, sed loris brunneis, fascia verticali nigra nulla, et torque præpectorali cinerascenti-brunneo distinguendus. (Descr. maris adulti ex Progreso, Yucatan. Mus. nostr.)

Hab. North America, eastern coast from Long Island and Nova Scotia, western coast from Lower California, southwards in winter [13]. — Mexico, Valley of Mexico (*Herrera* [10 11]), Mazatlan (*Grayson* [9]), San Blas, Tepic (*Richardson* [4]), Progreso, Yucatan [4], Cozumel I. [3 4], Holbox I. [4] (*Gaumer*); British Honduras, Grassy Cay (*O. S.* [4 6]); Guatemala, Chiapam (*O. S.* [4 7 8]).—South America to Peru [4]; West Indies [4].

Wilson's Plover nests on the southern Atlantic seaboard of the United States, and occasionally straggles northwards to Long Island and Nova Scotia. On the western side of North America it is found in California only, nesting abundantly in the southern portion of that State [12]. Salvin also found nests on Grassy Cay, one of the islets off the coast of Belize [6 8]. *O. wilsoni* appears to migrate along both shores of Central

America, and Herrera states that it passes through the Valley of Mexico in large flocks during September and October, returning in March [10]. It visits, during the winter, the coasts of South America and the West Indies, but does not appear to have been recorded from Chile or Patagonia.

Salvin found the species along with *Ægialeus semipalmatus* on the sandy flats of Chiapam, on the Pacific coast of Guatemala, where it was very common [8].

O. wilsoni is essentially a shore-bird, and appears to resemble in its habits the Kentish Plover of Europe. It travels north in the spring in small flocks, breaking up into pairs soon after arriving at its breeding-grounds. The nest, which is placed among the short grass bordering the beach where the birds resort, is a small depression in the ground, but the eggs, to the number of three or four, are sometimes laid in a scanty tuft of grass [12].

The two clutches taken by Salvin on Grassy Cay each consisted of three eggs. The latter are devoid of gloss, and are of a pale creamy-buff colour, marked with spots and small blotches of black and underlying pale purple, these markings frequently coalescing at the larger end and forming large patches [5].

OXYECHUS.

Oxyechus, Reichenbach, Av. Syst. Nat. p. xviii (1852); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 242 (1896).

The members of this genus have a feeble bill, this being much weaker than in *Ochthodromus*; the culmen is shorter than the length of the middle toe and claw, and the hind toe is absent. The principal character, however, which distinguishes *Oxyechus* is the long, wedge-shaped tail, which is more than half the length of the wing.

Four species are recognized, the typical *O. vociferus* being confined to America, while the other three are peculiar to the Ethiopian Region.

1. Oxyechus vociferus.

The Chattering Plover, Catesby, Nat. Hist. Carolina, i. p. 71, t. 71 [1].

Charadrius vociferus, Linn. Syst. Nat. i. p. 253 [2]; Wagler, Isis, 1831, p. 520 [3]; Moore, P. Z. S. 1859, p. 63 [4]; Dugès, La Nat. i. p. 142 [5]; v. Frantz. J. f. Orn. 1869, p. 378 [6]; Seebohm, Geogr. Distr. Charadr. p. 120 [7].

Ægialitis vociferus, Scl. P. Z. S. 1857, p. 206 [8]; 1859, pp. 369 [9], 393 [10]; 1864, p. 178 [11]; Scl. & Salv. Ibis, 1859, p. 227 [12]; P. Z. S. 1870, p. 838 [13]; Taylor, Ibis, 1860, p. 313 [14]; Lawr. Ann. Lyc. N. York, ix. p. 209 [15]; Salv. P. Z. S. 1870, p. 219 [16]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 178 [17].

Ægialitis vocifera, Lawr. Ann. Lyc. N. York, vii. p. 478 [18]; ix. p. 141 [19]; Mem. Bost. Soc. N. H. ii. p. 307 [20]; Bull. U. S. Nat. Mus. no. 4, p. 46 [21]; Salv. Cat. Strickl. Coll. p. 597 [22]; Ibis, 1889, p. 379 [23]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 129 [24]; Herrera, La Nat. (2) i. pp. 186 [25], 328 [26]; Stone, Pr. Philad. Acad. 1890, p. 203 [27]; Cherrie, Auk, 1892, p. 329 [28]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 526 [29]; Bull. Am. Mus. N. H. v. p. 33 [30];

A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 100[31]; Elliot, N. Amer. Shore-Birds, p. 175[32]; Underwood, Ibis, 1896, p. 449[33].

Oxyechus vociferus, Boucard, P. Z. S. 1878, p. 44[34]; Sumichr. La Nat. v. p. 232[35]; Nutting, Pr. U. S. Nat. Mus. vi. pp. 379[36], 390[37]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 148[38]; Ridgw. Pr. U. S. Nat. Mus. viii. p. 581[39]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 242[40]; Bangs, Auk, xviii. p. 358[41]; Oates, Cat. Eggs Brit. Mus. ii. p. 22[42].

Supra brunneus, dorso postico, uropygio et supracaudalibus cinnamomeis; tectricibus alarum et secundariis intimis dorso concoloribus, majoribus saturate brunneis, albo terminatis, fasciam alarem formantibus; remigibus nigricantibus, intus albis et albo terminaliter fimbriatis, macula longitudinali rhachidali vel fascia alba extus notatis; secundariis nigricantibus, ad basin albis, interioribus albis vix nigro extus notatis; rectricibus olivascenti-brunneis, fascia lata nigra subterminali ornatis, externis cinnamomeis, albo late terminatis, rectrice extima alba intus nigro quadratim fasciata; pileo et facie laterali brunneis; fronte, supercilio, genis et gutture toto albis, ad torquem cervicalem albam conjunctis; fascia post-frontali et altera post-cervicali nigris, hac ad fasciam latam jugularem conjuncta; præpectore torque collari duplici, fascia superiore cinnamomeo-fulva, inferiore tamen nigra ornato; corpore reliquo subtus albo: rostro nigro; pedibus pallide coccineis vel dilute flavicantibus; iride saturate brunnea; palpebris aurantiacis vel scarlatinis. Long. tota circa 9·5, alæ 6·4, caudæ 3·7, culm. 1·1, tarsi 1·4. (Descr. maris adulti ex Dueñas. Mus. nostr.)

♀ mari similis, sed torque præpectorali cinnamomeo-fulvo pallidiore distinguenda. Long. tota 9·5, alæ 6·4. (Descr. feminæ adultæ ex Mazatlan. Mus. nostr.)

Hab. Temperate North America, breeding northward to Newfoundland and Manitoba[31].—Mexico[35], Sonora, Bisbee, Greenbush Ranch, Pachico (*Robinette*[30]), Hermosillo[40], Ixtapalapa[40], Mexicalcingo[40], Chimalapa[40], Chapulco, Puebla[17], San Baltazar[40], Mayorazzo[40] (*Ferrari-Perez*), Rio de Iglesias, Chihuahua (*Lloyd*[40]), Nuevo Leon (*Armstrong*[40]), Matamoros and throughout the entire State of Tamaulipas (*Berlandier*[38]), Aldama, Tampico, Calvillo, Aguas Calientes, Jerez, Zacatecas, Calotlan and Lake Chapala, Jalisco (*Richardson*[40]), Valley of Mexico (*Herrera*[25 26]), city of Mexico (*White*[11]), Mazatlan (*Grayson*[20], *Forrer*[40]), Guanajuato, Guadalajara (*Dugès*[5]), Cofre de Perote, Vera Cruz, Patzcuaro (*F. D. G.*[40]), Vega del Cazadero (*Trujillo*[40]), Oaxaca (*Boucard*[10 40]), Jalapa (*Sallé*[8], *de Oca*[9], *Ferrari-Perez*[17]), Teapa (*Mrs. H. H. Smith*[40]), Santa Efigenia, Tehuantepec (*Sumichrast*[21]), Sisal, Yucatan (*Schott*[15]), Peto (*Gaumer*[40]), Progreso (*Stone & Baker*[27]), Cozumel I. (*Benedict*[39], *Gaumer*[23 40]); British Honduras, Cayo (*Blancaneaux*[40]); Guatemala (*Constancia*[22]), Dueñas, Quezaltenango, San Gerónimo (*O. S. & F. D. G.*[12 40]), Panajachel, Atitlan (*Richardson*[40]); Honduras, Tigré Island and Plains of Comayagua (*Taylor*[14]), San Pedro (*Whitely*[13]), Omoa (*Leyland*[5]); Nicaragua, San Juan del Sur[36], Sucuyá[37] (*Nutting*), Rio Escondido (*Richmond*[29]); Costa Rica, San José (*v. Frantzius*[6], *Carmiol*[19 40], *Boucard*[34], *Cherrie*[28]), Miravalles[33], Tambor, Laguna de Coris, slopes of Irazu (*Underwood, in litt.*), Alajuela, Cartago (*Zeledon*[24]); Panama (*M'Leannan*[18]), Divala, Chiriqui (*Brown*[41]), southern slope of Volcan de Chiriqui (*Arcé*[16 40]).—South America to Chile[40]; West Indies[40]; Bermuda Is.[40].

The Kildeer Plover, so called from its cry, is a well-known North-American bird,

which has, on more than one occasion, wandered to Great Britain. It is found during the breeding-season all over the United States and Western Canada, but is very seldom observed on the sea-shore. The species occurs in Central America principally on migration or as a winter visitor, but it is recorded by Berlandier [38] as breeding in the State of Tamaulipas, while Robinette [30] met with it in Sonora in June, so that it probably nests there also. Herrera [25] states that it passes through the Valley of Mexico in very large flocks in September and October, returning in March, and it was noticed by Mr. Richmond as plentiful on the Escondido River [29], where he first heard the bird on the 11th of November.

The account given by Mr. Elliot suggests that *O. vociferus* resembles in its habits some of the inland Plovers of India and Africa. It frequents pools and the banks of streams, and often affects the ploughed lands, searching for worms and small insects [32]. In Costa Rica, where the species is stated to be very common on the plains round San José, M. Boucard saw it catching grasshoppers and small insects on the wing [34].

Four eggs are laid in a depression on the ground, of a pyriform shape and slightly glossy. They are of a pale creamy-buff colour, marked with spots and small blotches of dark brown and black, with occasionally lines and scrawls. The markings are generally more thickly collected round the larger end, and the underlying purple markings are very indistinct [42].

ÆGIALEUS.

Ægialeus, Reichenbach, Av. Syst. Nat. p. xviii (1852); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 250 (1896).

The single species belonging to this genus is in appearance a Sand-Plover, but differs from the members of the genus *Ægialitis* in having the outer toe joined to the middle one by a web as far as the second joint. It is distinguished from *Oxyechus* by its much shorter tail, which is square instead of being wedge-shaped, and does not equal half the length of the wing.

Ægialeus is confined to the New World.

1. Ægialeus semipalmatus.

Charadrius semipalmatus, Bp. Journ. Acad. Philad. v. p. 98 [1]; v. Frantz. J. f. Orn. 1869, p. 378 [2]; Seebohm, Geogr. Distr. Charadr. p. 123 [3].

Ægialites semipalmatus, Salv. Ibis, 1865, p. 191 [4]; 1866, p. 197 [5]; Grayson, Pr. Bost. Soc. N. H. xiv. p. 285 [6]; Sumichr. La Nat. v. p. 232 [7].

Ægialitis semipalmata, Lawr. Mem. Bost. Soc. N. H. ii. p. 307 [8]; Bull. U. S. Nat. Mus. no. 4, p. 46 [9]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 154 [10]; Zeledon, Pr. U. S. Nat. Mus. viii. p. 113 [11]; Salv. Ibis, 1889, p. 279 [12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 100 [13]; Elliot, N. Amer. Shore-Birds, p. 170 [14]; Nelson, N. Amer. Fauna, no. 14, p. 34 [15].

Ægialeus semipalmatus, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 250 [16]; Oates, Cat. Eggs Brit. Mus. ii. p. 23 [17].

Ptil. hiem. Supra brunneus, tectricibus alarum majoribus albo terminatis, fasciam albam formantibus ; remigibus sepiariis, rhachidibus albis, secundariis brunneis, longioribus extus albis, intimis longissimis dorso concoloribus ; rectricibus brunneis, albo terminatis, fascia lata nigra subterminali ornatis, rectricibus duabus extimis pure albis ; loris et linea frontali basali et fascia altera postfrontali nigris, facie laterali nigra, postice brunnea ; genis cum gutture toto, torque collari et corpore subtus pure albis ; torque nigro cervicem totam circumdante : rostro nigro, basaliter aurantiaco ; pedibus pallide carneis, unguibus nigris ; iride saturate coryllina. Long. tota circa 6·5, alæ 4·5, caudæ 1·15, culm. 0·6, tarsi 0·95.

♀ mari similis, sed fascia nigra verticali obsoleta, et torque cervicali brunneo nec nigro distinguendus. Long. tota circa 6·5, alæ 4·6. (Descr. maris et feminæ ptil. hiem. ex Chiapam. Mus. nostr.)

Hab. North America, Arctic and sub-Arctic Regions, migrating south in autumn [13].—Mexico, Mazatlan (*Grayson* [8]), Tres Marias Is. (*Grayson* [6 8 15], *Forrer* [16]), San Mateo, Tehuantepec [9], Santa Maria del Mar [7] (*Sumichrast*), Cozumel I. (*Gaumer* [12 16]); Guatemala, Chiapam (*O. S.* [4 5 16]); Costa Rica (*v. Frantzius* [2], *Zeledon* [11]), Bahia de Salinas (*Underwood, in litt.*).—South America generally and West Indies, in winter [16].

Compared with *Ochthodromus wilsoni* and *Oxyechus vociferus*, this species is a stoutly-built little bird with a small thick bill. In general appearance it resembles the Common Ring-Plover of Europe (*Ægialitis hiaticula*).

Æ. semipalmatus breeds in the Arctic Regions of North America and Greenland, being known in the United States chiefly as a migrant. Like many other wading birds, it passes along the coasts of Central America in spring and autumn, some individuals doubtless wintering in these localities, also visiting the West Indies and the Galapagos Islands, and occurring on the coasts of South America as far down as Brazil and Chile. It does not seem to be very plentiful in Central America, and Salvin only once met with the bird on the sandy flats of Chiapam, on the Pacific coast of Guatemala, in January [4].

The habits of this Plover resemble those of the species of *Ægialitis*. It frequents the sandy beaches on the sea-shore in company with other small Waders, also visiting the saltings and mud-flats when the tide recedes. On migration it passes through the interior of North America, and is then found on the edges of ponds and inland rivers, its food consisting of minute mollusca and insects [14].

The bird makes no nest, but lays its four eggs in a depression, which is sometimes lined with a few dead leaves. The eggs are of a drab-colour, with black spots and blotches [14].

ÆGIALITIS.

Ægialitis, Boie, Isis, 1822, p. 553 ; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 254 (1896).

This genus, which comprises the true Sand-Plovers, is very like the preceding in form and appearance, but has all the toes free down to the base, without any connecting web as in *Ægialeus*. The hind toe is wanting, and the tail is short and square, not equalling half the wing in length. Eighteen species are recognized, two of which have been recorded from Central America.

1. Ægialitis collaris.

Mbatuitui collar negro, Azara, Apunt. iii. p. 291 [1].

Charadrius collaris, Vieill. N. Dict. d'Hist. Nat. xxvii. p. 136 [2]; Seebohm, Geogr. Distr. Charadr. p. 173 [3].

Ægialitis collaris, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 46 [4]; Sumichr. La Nat. v. p. 232 [5]; Richmond, Pr. U. S. Nat. Mus. xvi. p. 526 [6]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 288 [7]; Oates, Cat. Eggs Brit. Mus. ii. p. 27 [8].

Ægialitis azaræ, Lawr. Ann. Lyc. N. York, vii. p. 334 [9].

Ægialitis nivosus (nec Cass.), Salv. Ibis, 1865, p. 191 [10]; 1866, p. 196 [11].

Ptil. hiem. Brunnea, vix cinnamomeo lavata; fronte et supercilio indistincto albis; fascia postfrontali lata et striga lorali nigris; regione paroticali brunnea; genis et corpore subtus toto albis, torque præpectorali nigro; alis brunneis, plumis cinnamomeo marginatis, tectricibus alarum majoribus albo terminatis; tectricibus primariorum remigibusque saturate brunneis, albo terminaliter fimbriatis, rhachidibus primariorum albis, secundariis intimis dorso concoloribus; rectricibus brunneis, albo minute terminatis, duabus extimis pure albis, tertia proxima pallide brunnea, extus et ad apicem alba: rostro nigro; pedibus carneis; iride brunnea. Long. tota circa 5·9, alæ 3·9, caudæ 1·85, culm. 0·75, tarsi 1·0. (Descr. avis adultæ ex Chiapam. Mus. nostr.)

Ptil. æstiv. ptilosi præcedenti similis, sed plumis notæi magis cinnamomeo indutis, pileo medio et præpectoris lateribus clare cinnamomeo indutis. Long. tota circa 5·2, alæ 3·7. (Descr. feminæ adultæ ex Playa Vicente. Mus. nostr.)

Hab. Mexico, Playa Vicente, La Antigua, Vera Cruz (*Trujillo* [7]), Tehuantepec city (*Sumichrast* [4 5]); Guatemala, Chiapam, Pacific coast (*O. S.* [7 10], *Arcé* [11]); Nicaragua, Momotombo (*Richardson* [7]); Costa Rica, Rio Frio (*Richmond* [6]); Panama (*M'Leannan* [9]).—South America generally [7]; West Indies, Grenada [7].

Æ. collaris is a well-known species of Sand-Plover in the Neotropical Region and is easily recognized by the distinct black collar on the fore-neck. The upper surface is uniform in colour and has no black or white collars on the hind-neck, such as are often seen in the members of this genus.

Though generally found on the coast in Central America, it is also met with on the rivers of the interior, as is the case in South America. In habits this bird appears to resemble its congeners.

2. Ægialitis nivosa.

Ægialitis nivosus, Cass. in Baird's Birds N. Amer. p. 696 [1]; Lawr. Ann. Lyc. N. York, ix. p. 209 [2]; Mem. Bost. Soc. N. H. ii. p. 307 [3].

Ægialitis nivosa, Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 129 [4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 102 [5]; Elliot, N. Amer. Shore-Birds, p. 188 [6]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 290 [7]; Oates, Cat. Eggs Brit. Mus. ii. p. 27, t. 2. fig. 5 [8].

Ægialitis alexandrina nivosa, Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 164 [9].

Charadrius cantianus nivosus, Seebohm, Geogr. Distr. Charadr. p. 171 [10].

Ptil. hiem. *Æ. collari* similis, sed major, loris pure albis, haud linea nigra transversa ornatis; torque præpectorali nullo, torque cervicali albo obsoleto, plaga nigra ad latera colli insignis: rostro nigro, mandibulæ basi sordide aurantiaca; pedibus purpurascenti-nigris; iride nigra. Long. tota circa 5·8, alæ 4·3, caudæ 1·85, culm. 0·8, tarsi 0·9. (Descr. avis adultæ ex Mexico meridionali. Mus. nostr.

Ptil. æstiv. ptilosi hiemali similis, sed pileo paullo cinnamomeo lavato, fascia postfrontali transversa nigra distincta, regione parotica nigra distinguenda. Long. tota circa 6·2, alæ 4·2. (Descr. feminæ adultæ ex Corpus Christi, Texas. Mus. nostr.)

Hab. North America, Western United States, from California east to Kansas and Western Gulf States [5].—Mexico, Mazatlan (*Grayson* [3]), Celestin, N. Yucatan (*Schott* [2]); Costa Rica (*Zeledon* [4]).—Western South America to Peru and Chile [7].

The Snowy Sand-Plover belongs to the section of the genus *Ægialitis* in which the species have the lores entirely white. In general appearance it resembles the Kentish Plover of Europe (*Æ. alexandrina*), but is distinguished from the latter and from *Æ. collaris* by the absence of the black loral line.

Ægialitis nivosa is an inhabitant of the Western United States, but extends eastward into Kansas and Texas; we have received a good series of skins from Mr. Armstrong from Corpus Christi. Its winter habitat seems to be the western side of South America, where it ranges as far south as Chile. In Central America it is probably only a bird of passage, and the records of its occurrence are very few; the species would appear, however, to pass by both the Atlantic and Pacific coasts, having been procured at Mazatlan by Grayson [3], and by Schott in Northern Yucatan [2]. Zeledon also places it in his list of Costa Rican birds [4].

Like its European ally, this Plover congregates after the breeding-season in small flocks, which follow the receding tidal water to pick up small shells, crustacea, and insects. Elliot says that its note is low and rather mournful. The eggs, three or four in number, are laid in a small hollow scooped out in the sand [6]; they are of a pale creamy-buff colour, with spots, lines, and scrawls of dark brown or black, and a few underlying markings of pale purple.

Subfam. *HIMANTOPODINÆ.*

The members of this subfamily, the Stilts (*Himantopus*) and the Avocets (*Recurvirostra*), are chiefly remarkable for their extremely long legs, which, when outstretched, extend far beyond the tip of the tail. The bill is straight in *Himantopus* and upturned in *Recurvirostra*; in both it is smooth and tapering towards the tip, with no dertral swelling at the end.

HIMANTOPUS.

Himantopus, Briss. Orn. v. p. 33 (1760); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 309 (1896).

The long legs of the Stilts are their chief characteristic, the tarsus being more than twice the length of the middle toe and claw. The bill is straight and of nearly uniform length, tapering slightly towards the tip. The toes are cleft to their base, and have scarcely any interdigital web. The hind toe is absent.

The genus *Himantopus* is represented in every tropical and temperate region throughout the globe. Six species are known, of which one, *H. melas* of New Zealand, following the peculiar characteristics of the southern Oyster-catchers, is entirely black. Two inhabit the New World, viz., *H. melanurus*, restricted to the southern continent, and *H. mexicanus*, of North, Central, and South America.

1. Himantopus mexicanus.

L'Échasse de Mexique, Briss. Orn. v. p. 36 (1760) [1].

Charadrius mexicanus, P. L. S. Müll. Syst. Nat. Anhang, p. 117 (1776) [2].

Himantopus mexicanus, Wagler, Isis, 1831, p. 520 [3]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 345 [4]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 178 [5]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 130 [6]; Herrera, La Nat. (2) i. pp. 186 [7], 328 [8]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526 [9]; Allen, Bull. Am. Mus. N. H. v. p. 33 [10]; Jouy, Pr. U. S. Nat. Mus. xvi. p. 791 [11]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 84 [12]; Elliot, N. Amer. Shore-Birds, p. 35 [13]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 320 [14]; Oates, Cat. Eggs Brit. Mus. ii. p. 34 [15].

Himantopus nigricollis, Vieill. N. Dict. d'Hist. Nat. x. p. 42 [16]; Scl. P. Z. S. 1857, p. 206 [17]; 1864, p. 178 [18]; Scl. & Salv. Ibis, 1859, p. 228 [19]; Lawr. Ann. Lyc. N. Y. viii. p. 12 [20]; Mem. Bost. Soc. N. H. ii. p. 308 [21]; Bull. U. S. Nat. Mus. no. 4, p. 46 [22]; Salv. Ibis, 1865, p. 192 [23]; Cat. Strickl. Coll. p. 605 [24]; Ibis, 1889, p. 379 [25]; Dugès, La Nat. i. p. 142 [26]; Sumichr. La Nat. v. p. 233 [27].

Himantopus rufipes (nec Bechst.), Licht. Preis-Verz. Mex. Vög. p. 3 [28]; Cab. J. f. Orn. 1863, p. 58 [29].

Ptil. hiem. Supra brunneus, alis viridi-nigris, ad apicem cinereo vix fimbriatis; dorso postico et uropygio pure albis; supracaudalibus et rectricibus pallide cineraceis; fronte, loris et facie laterali, cum plumis postocularibus, albis; pileo reliquo, regione suboculari et parotica nigris; collo postico et interscapulio summo cinerascenti-fuscis; corpore subtus toto albo: rostro nigro; pedibus pallide coccineis; iride roseo-coccinea. Long. tota circa 13·0, alæ 8·5, caudæ 3·1, culm. 2·95, tarsi 4·45. (Descr. avis adultæ ex San José, Guatemala. Mus. nostr.)

Ptil. æstiv. Supra viridi-niger, alis dorso concoloribus; dorso postico et uropygio pure albis; supracaudalibus rectricibusque pallide cineraceis; fronte lata, loris, plumis postocularibus, genis et corpore subtus toto pure albis. Long. tota circa 12·0, alæ 8·6, caudæ 2·6, culm. 2·5, tarsi 4·2. (Descr. maris adulti ex Momotombo, Nicaragua. Mus. nostr.)

♀ mari similis, sed dorso et scapularibus brunneis distinguendus. Long. tota circa 12·5, alæ 8·4. (Descr. ♀ ad. æstiv. ex Brownsville, Texas. Mus. nostr.)

Hab. North America, from the Northern United States southward; rare in the Eastern States, except in Florida [12].—Mexico (*Deppe & Schiede* [28 29], *Wagler* [3]), Chachuta, Sonora (*Robinette* [10]), Mazatlan (*Grayson* [21]), Tres Marias Is., Presidio (*Forrer* [14]), Rio de Coahuayana (*Xantus* [21]), Guanajuato and Guadalajara (*Dugès* [26]), Santana, Jalisco (*Lloyd* [14]), Tamesi, Zapotlan (*Richardson* [14]), Valley of Mexico (*Herrera* [7 8]), city of Mexico (*White* [18]), Lake Patzcuaro (*Jouy* [11]), Tampico, Tamaulipas, Lake Tamaqua and Tuxpan in Vera Cruz (*Berlandier* [4]), Jalapa (*Sallé* [17]), Laguna de Chapulco, Puebla [5], Santa Ana [14] (*Ferrari-Perez*), San Mateo, Tehuantepec (*Sumichrast* [22]), Progreso, N. Yucatan (*Devis* [14], *Gaumer* [14]),

Cozumel I., Holbox I. (*Gaumer* [14 25]); Guatemala (*Constancia* [19, 24]), San José [14], Chiapam [23] (*O. S.*); Honduras, Ruatan I. (*Gaumer* [14 25]); Nicaragua, Momotombo (*Richardson* [14]); Costa Rica, Rio Frio (*Richmond* [9]), Las Trojas (*Zeledon* [6]); Panama (*M'Leannan* [20]).—Guiana [14]; Amazons [14]; Peru [14]; Galapagos Is. [14]; Antilles [14].

This Stilt is rather plentifully distributed over some of the Western and Gulf States of North America, breeding in South-eastern Oregon and on the Great Salt Lake southwards to Texas and Florida. The species appears to be migratory in Central America, as Grayson states [21] that it arrives at Mazatlan in October and remains till April, during which season it is abundant. Most of our specimens have been procured during the winter months, but Mr. Richardson obtained one in Nicaragua on the 29th of May [14], and Dr. Gaumer met with two individuals on Cozumel Island in June [14]. In Guatemala, Salvin noticed it in some numbers at Chiapam, on the Pacific side, but there the species was in small flocks [23].

In North America, *H. mexicanus* is generally seen in small parties on the shores of inland lakes and on the flats near the sea-shore. The long legs and stalking gait make it a conspicuous object, and the flight is also noteworthy, as the bird turns its black back and pure white under surface alternately to the light. It has the habit of wading out to a considerable distance, often plunging its head and neck under water in pursuit of prey, which consists of small crustacea, worms, insects, &c. The nest is sometimes a small structure of straw and grass just raised above the level of the water, but is generally a slight depression in the sand [13]. The eggs are three or four in number, and are described as having the ground-colour drab, brownish-olive, occasionally rufous, blotched and spotted with brownish-black [13].

RECURVIROSTRA.

Recurvirostra, Linn. Syst. Nat. i. p. 256 (1766); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 326 (1896).

The Avocets are long-legged birds like the Stilts, but they are easily recognizable from the latter, not only by the upturned form of the bill, but by the presence of a hind toe and an interdigital web connecting the front toes. The legs are not abnormally developed as in the Stilts, but they are, nevertheless, decidedly long, and the tarsus is twice the length of the middle toe and claw. The bill is smooth throughout, tapering gradually to a very slender tip, which is turned upwards, but the genys, or under surface of the lower mandible, is curiously flattened, and is used for scattering the sand as the birds search for their food.

Four species of *Recurvirostra* are known, of which one, *R. americana*, is found within our limits.

1. Recurvirostra americana.

American Avocet, Penn. Arctic Zool. ii. p. 502, t. 21 [1].

Recurvirostra americana, Gm. Syst. Nat. i. p. 693 [2]; Salv. Ibis, 1865, p. 192 [3]; 1866, p. 198 [4]; Dresser, Ibis, 1866, p. 35 [5]; Dugès, La Nat. i. p. 142 [6]; Lawr. Mem. Bost. Soc. N. H. ii. p. 308 [7]; Sumichr. La Nat. v. p. 233 [8]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 341 [9]; Herrera, La Nat. (2) i. pp. 186 [10], 328 [11]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 83 [13]; Elliot, N. Amer. Shore-Birds, p. 33 [14]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 330 [15]; Oates, Cat. Eggs Brit. Mus. ii. p. 36 [16].

Recurvirostra occidentalis, Vig. Zool. Journ. iv. p. 356 [17]; Wagler, Isis, 1831, p. 522 [18].

Ptil. hiem. pileo, collo postico et facie laterali margaritaceo-cinereis; dorso toto et uropygio pure albis, supracaudalibus margaritaceo-cinereis; scapularibus nigricanti-brunneis, extimis dimidiatim albis, fasciam longitudinalem albam formantibus; ala nigra, tectricibus alarum albo terminatis; secundariis externis dimidiatim brunneis et albis, extus albo plus minusve marginatis; secundariis interioribus quibusdam pure albis, intimis longissimis brunneis cinereo lavatis; rectricibus pallide cinereis, extimis intus albis; fronte, loris, genis et corpore subtus toto pure albis: rostro nigro; pedibus cyanescenti-cinereis; iride umbrina. Long. tota circa 15·8, alæ 9·0, caudæ 3·4, culm. 4·0, tarsi 3·75.

♀ mari similis. Long. tota circa 15·5, alæ 8·8. (Descr. maris et feminæ hiem. ex Chiapam. Mus. nostr.)

Ptil. æstiv. pileo, collo postico et laterali, et corpore subtus pallide vinaceo-cinnamomeo indutis. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

Hab. North America, north to the Saskatchewan and Great Slave Lake; rare in the Eastern United States [13].—Mexico (*Wagler* [18]), Matamoros (*Dresser* [5]), Oputo, Sonora (*Robinette* [12]), Mazatlan (*Grayson* [7]), Rio de Coahuayana (*Xantus* [7]), Zacatecas (*Richardson* [15]), Guanajuato and Guadalajara (*Dugès* [6]), Valley of Mexico (*Herrera* [10 11]), east coast of Mexico, Alvarado and Cordova in Vera Cruz (*Sumichrast* [8]), S. Mexico (*Boucard* [15]); Guatemala, Chiapam (*O. S.* [3 4 15]).

This bird is an inhabitant of North America, having nearly the same range as *Himantopus mexicanus*, but extending a little farther north than the last-named species. It appears to be a winter visitor to Central America, as Herrera says that it occurs on migration in the Valley of Mexico in August and September [10]. Grayson speaks of the Avocet as a winter visitor at Mazatlan [7], and Salvin found it plentiful in Guatemala, at Chiapam, and about the neighbouring lagoons [4].

When not molested, the American Avocet is of a tame disposition, but if persecuted speedily becomes very shy and wary. The bird seeks its food along the shallows, wading for some distance into the water, and often plunging its head and neck under the surface. The thick-set plumage and webbed feet enable it to be quite at home in the water, and it is a good swimmer [14].

The nest is made of dry grass and is placed in a tussock, generally in marshy places. The eggs are four in number, varying in colour from dark olive to buff, and thickly spotted or blotched with chocolate- or sepia-brown [9 14].

Subfam. *TOTANINÆ*.

The Totaninæ have an extensive nasal groove in the upper mandible, produced along the greater part of the latter. The tarsus, in all but the Curlews, has transverse plates on both the anterior and posterior aspect, and there is an interdigital web connecting the outer and inner toes with the middle one.

The members of this subfamily, which embraces the Curlews, Godwits, and most of the Sandpipers, are spread all over the world and are everywhere strongly represented.

NUMENIUS.

Numenius, Briss. Orn. v. p. 311 (1760) ; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 340 (1896).

The Curlews are birds of considerable size, with a curved or distinctly arched bill, the tarsus being transversely scaled in front and reticulate behind.

Eight species of Curlew are known, of which four are confined to America or the Pacific Islands, the other four being found in the Old World. Most of them breed in the temperate portions of each hemisphere, and migrate south in winter; but at least one species, *N. tenuirostris*, is resident in south temperate regions, being confined to the Mediterranean area.

1. Numenius longirostris.

Numenius longirostris, Wilson, Amer. Orn. viii. p. 23, t. 64. fig. 4[1]; Licht. Preis-Verz. Mex. Vög. p. 3[2]; Cab. J. f. Orn. 1863, p. 59[3]; Scl. P. Z. S. 1864, p. 178[4]; Schl. Mus. Pays-Bas, Scolopaces, p. 85[5]; Salv. Ibis, 1865, p. 190[6]; 1866, p. 197[7]; 1889, p. 379[8]; Dresser, Ibis, 1866, p. 40[9]; Dugès, La Nat. i. p. 142[10]; Finsch, Abhandl. nat. Ver. Bremen, 1870, p. 363[11]; Lawr. Mem. Bost. Soc. N. H. ii. p. 309[12]; Bull. U. S. Nat. Mus. no. 4, p. 48[13]; Sumichr. La Nat. v. p. 233[14]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 311[15]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179[16]; Herrera, La Nat. i. pp. 186[17], 328[18]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 97[19]; Elliot, N. Amer. Shore-Birds, p. 151[20]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 352[21]; Oates, Cat. Eggs Brit. Mus. ii. p. 38, t. 2. fig. 8[22].

Ptil. hiem. Supra brunnescenti-nigro et pallide cinnamomeo variegatus, dorso maculis rufescentibus ornato; tectricibus alarum cinnamomeis, minimis et medianis nigro medialiter notatis; majoribus autem et remigibus plerisque, dorso postico, uropygio supracaudalibus rectricibusque cinnamomeis brunneo fasciatis; primariis externis extus et ad apicem nigricantibus; secundariis intimis brunneo et cinnamomeo dentatim fasciatis; pileo dorso concolore; collo undique pallide cinnamomeo, nigricanti-brunneo longitudinaliter lineato; supercilio lato albido; facie laterali pallide cinnamomea, vix brunneo striolata; gutture albicante; corpore reliquo subtus dilute cervino; subalaribus, axillaribus et remigibus intus cinnamomeis: rostro nigro, mandibulæ dimidio basali lilacino-brunneo; pedibus cinereis; iride brunnea. Long. tota circa 24·0, alæ 10·8, caudæ 4·9, culm. 7·9, tarsi 3·55. (Descr. avis adultæ ex Dueñas. Mus. nostr.)

♀ mari similis, sed paullo major.

Ptil. æstiv. gutturis imi et præpectoris plumis medialiter nigro striolatis; hypochondriis fusco-brunneo sparsim fasciatis.

Hab. North America, breeding in the South Atlantic States and in the interior

throughout most of its North-American range[19].—Mexico (*Deppe & Schiede*[2 3], *Sumichrast*[14]), Matamoros (*Dresser*[9]), Rio Guerrero, Chihuahua (*Lloyd*[21]), San Blas, Tepic, Zacatecas (*Richardson*[21]), Mazatlan (*Grayson*[12], *Kegel*[11]), Guanajuato and Guadalajara (*Duyès*[10]), Valley of Mexico (*Herrera*[17 18]), city of Mexico (*White*[4]), Juchitan, Tehuantepec (*Sumichrast*[13]), Laguna de San Baltazar, Puebla (*Ferrari-Perez*[16]), Cozumel I. (*Gaumer*[8 21]); Guatemala, Dueñas, Chiapam (*O. S.*[7 21]).—Cuba[21]; Jamaica[21].

The Long-billed Curlew has a somewhat restricted range for a member of the genus *Numenius*, and its winter-quarters do not seem to extend south of Guatemala. It inhabits North America, extending to Manitoba, and is said to breed throughout this portion of its range, nesting even in the Southern Atlantic States. The species is only a winter visitor to Central America, where it occurs on both coasts, and passes through the Valley of Mexico on migration. In Guatemala we found *N. longirostris* to be far less common than *N. hudsonicus*.

In the breeding-season the present species is found, according to Mr. Elliot, in grassy and wet situations. In winter it assembles in flocks, and can be easily decoyed within shot, but during the nesting-time is a shy and wary bird. Its food consists of small crustacea, worms, insects, and berries[20]. The nest is a mere depression in the ground, and the eggs, four in number and pyriform in shape, are of a pale greenish stone-colour, rather densely marked with greyish-brown and underlying pale purple; the surface-markings have generally a streaky appearance, especially at the larger end.

2. Numenius hudsonicus.

Hudsonian Curlew, Lath. Gen. Syn., Suppl. i. p. 243[1].

Numenius hudsonicus, Lath. Ind. Orn. ii. p. 712[2]; Taylor, Ibis, 1860, p. 313[3]; Salv. Ibis, 1865, p. 190[4]; 1866, p. 197[5]; v. Frantz. J. f. Orn. 1869, p. 377[6]; Finsch, Abh. nat. Ver. Bremen, 1870, p. 363[7]; Lawr. Mem. Bost. Soc. N. H. ii. p. 309[8]; Bull. U. S. Nat. Mus. no. 4, p. 48[9]; Sumichr. La Nat. v. p. 233[10]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 315[11]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 130[12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 97[13]; Elliot, N. Amer. Shore-Birds, p. 157[14]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 364[15].

Ptil. hiem. Supra fusco-brunneus, plumis grisescenti-albido maculatis vel marginatis; dorso postico, uropygio et supracaudalibus brunneis rufo transfasciatis; alis dorso concoloribus; primariis saturate brunneis, intus dentatim fasciatis vel maculatis, secundariis regulariter brunneo et fulvo transfasciatis, intimis fere brunneis; rectricibus fumoso-brunneis, brunneo- vel rufescenti-fulvo transfasciatis; pileo utrinque nigricanti-brunneo, medialiter striga longitudinali pallida ornato; loris fuscis; supercilio lato albido, postice minute nigro striolato; facie laterali albida, nigro striolata; gula albida; corpore reliquo pallide cervino, abdomine pallidiore, collo et præpectore brunneo striolatis; hypochondriis brunneo late fasciatis; subalaribus cervinis, brunneo maculatis vel fasciatis; axillaribus regulariter brunneo et pallide rufescente transfasciatis: rostro brunnescenti-nigro, mandibulæ basi pallide carnea; pedibus grisescenti-cæruleis; iride saturate brunnea. Long. tota circa 15·0, alæ 9·1, caudæ 3·5, culm. 3·8, tarsi 2·35. (Descr. feminæ adultæ ex Chiapam. Mus. nostr.)

♀ mari similis, vix major.
Ptil. æstiv. Subtus striis et maculis brunneis magis distincte notatus.

Hab. North America, breeding in the extreme north, wintering chiefly south of the United States [13].—Mexico, Mazatlan (*Grayson* [8], *Kegel* [7], *Forrer* [15]), Rio Zacatula (*Xantus* [8]), Ventosa Bay, Tehuantepec (*Sumichrast* [9]); Guatemala, Lagoon of Chiapam (*O. S.*[4 5 15]); Honduras, Fonseca Bay (*Taylor* [3]); Costa Rica (*v. Frantzius* [6]), Punta Arenas (*Zeledon* [12]), San Lucas (*Underwood, in litt.*).—South America generally in winter [15]; Galapagos Is.[15].

This species belongs to the group of Whimbrels, and, like the European *N. phæopus*, has a pale streak down the middle of the crown, the sides of which form a broad lateral band of black. *N. hudsonicus* is a much smaller bird than *N. longirostris*, and is distinguished by its dusky axillaries and under wing-coverts, which are barred with brown and pale rufous.

Its breeding-range extends far to the north, and in winter the bird wanders over the greater part of the Neotropical Region. In Honduras, Cavendish Taylor found the species abundant on the shores of Fonseca Bay, sitting on the branches of the mangrove-trees overhanging the water [3]. Salvin also found it very abundant about the lagoons of Chiapam [5].

The habits of this Whimbrel are apparently very similar to those of the European species, and, like the latter, it frequents the shores and mud-flats during migration, being generally found in small companies; in these situations its food consists of worms, small molluscs, &c., but in more northern latitudes berries form a staple article of diet.

The nest is a depression in the ground with a few dead leaves for lining; the eggs are four in number, of a creamy-drab colour, spotted with slaty brown [14].

LIMOSA.

Limosa, Briss. Orn. v. p. 261 (1760); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 372 (1896).

The Godwits differ from the Curlews in having the bill straight or only slightly upturned; it is of considerable length, exceeding the dimensions of the tail.

The typical forms (*Limosa*) have a world-wide distribution, but the range of some of them, both in the Old World and the New, is rather peculiar. Five species are known, and of these *L. lapponica* breeds in the arctic regions of Europe and Siberia and winters in the subtropical portions of the Old World, like *L. fedoa* of America, whereas *L. novæ-zealandiæ*, *L. ægocephala*, and *L. hudsonica*, which breed further north, extend their winter range into the southern hemispheres.

Only one, *L. fedoa*, appears to occur within our limits on its migrations, the two other American species of the genus apparently passing to their winter homes by other routes than through Central America.

1. Limosa fedoa.

The Greater American Godwit, Edwards, Nat. Hist. Birds, iii. p. 137, t. 137 [1].

Scolopax fedoa, Linn. Syst. Nat. i. p. 244 [2].

Limosa fedoa, Moore, P. Z. S. 1859, p. 64 [3]; Scl. & Salv. Ibis, 1859, p. 230 [4]; Salv. Ibis, 1865, p. 190 [5]; 1889, p. 379 [6]; Dresser, Ibis, 1866, p. 39 [7]; Lawr. Ann. Lyc. N. Y. ix. p. 210 [8]; Mem. Bost. Soc. N. H. ii. p. 308 [9]; Dugès, La Nat. i. p. 142 [10]; Sumichr. La Nat. v. p. 232 [11]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 255 [12]; Herrera, La Nat. (2) i. pp. 186 [13], 328 [14]; Elliot, N. Amer. Shore-Birds, p. 105 [15]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 91 [16]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 391 [17].

Ptil. hiem. Supra brunnea, pallide cinnamomeo maculata vel fasciata; alis cinnamomeis, plumis medialiter brunneo striatis, tectricibus majoribus vix brunneo vermiculatim fasciatis; remigibus cinnamomeis, primariis extimis extus et ad apicem saturate sepiariis, proximis paullo cinnamomeo extus vermiculatis; secundariis plerisque cinnamomeis concoloribus, intimis dorso concoloribus brunneo fasciatis; dorso postico, uropygio, supracaudalibus rectricibusque cinnamomeis, brunneo transfasciatis; pileo brunneo, plumis medialiter saturate brunneis, quasi striatis; loris fuscescentibus; supercilio lato isabellino; facie laterali isabellina, minute brunneo striolata; corpore subtus pallide cervino; subalaribus, axillaribus et remigibus intus clare cinnamomeis: rostro nigricanti-brunneo, mandibula dimidiatim carnea; pedibus cyanescenti-griseis; iride brunnea. Long. tota circa 16·5, alæ 9·3, caudæ 3·4, culm. 4·6, tarsi 2·8. (Descr. avis adultæ ex Chiapam. Mus. nostr.)

Ptil. æstiv. Supra ptilosi hiemali similis, sed nigricantior; gutture albidiore; collo minute brunneo striato et hypochondriis brunneo anguste fasciatis distinguenda. (Descr. avis adultæ ex Dakota. Mus. Brit.)

Hab. North America, breeding in the interior, from Iowa and Nebraska, northward to Manitoba and the Saskatchewan [16].—Mexico (*Sumichrast* [11]), Matamoros (*Dresser* [7]), Mazatlan (*Grayson* [9], *Abert* [9]), Guanajuato (*Dugès* [10]), Valley of Mexico (*Herrera* [13 14]), Merida in Yucatan (*Schott* [8]), Cozumel I. (*Gaumer* [6 17]); British Honduras, Belize (*Leyland* [3 4]); Guatemala, Chiapam (*O. S.* [5 17]).—Cuba [17].

The Marbled Godwit breeds in the interior of North America as far north as Manitoba, its nesting-range being of about the same extent as that of *Numenius longirostris*, and, like that species, it does not visit the Arctic Regions. It is a winter visitor to Central America, being common at Mazatlan during that season, remaining till late in the spring, while, according to Grayson, a few stop throughout the summer [9]. Herrera states that this Godwit is very common in the Valley of Mexico [13], and Salvin found it abundant on the Lagoon of Chiapam [5].

L. fedoa reaches its northern home in small parties and pairs soon after arrival. On the autumn passage it frequents the saltings and mud-flats in flocks of from twenty to thirty individuals, but sometimes thousands of these birds have been observed together. They often feed in company and exhibit much attachment to each other. The nest is a depression in the ground with a slight lining of grass, and is usually found near water. The eggs are four in number, of an olive-drab colour, with various shades of yellow and umber-brown [15].

MACRORHAMPHUS.

Macrorhamphus, Leach, Syst. Cat. Mamm. & Birds Brit. Mus. p. 31 (1816); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 393 (1896).

This curious genus is intermediate in form between the Godwits and the Sandpipers. It has a long bill, as in *Limosa*, with the culmen exceeding the length of the tail, but both mandibles are widened and pitted at the end, and the groove on the lower mandible extends nearly to the tip of the latter.

Two species are known—*M. griseus* being a Nearctic form, which winters in Central and South America, while *M. taczanowskii* breeds in Eastern Siberia and winters in the Burmese provinces and N.E. Bengal.

1. Macrorhamphus griseus.

Brown Snipe, Lath. Gen. Syn. iii. pt. 1, p. 154 [1].

Scolopax grisea, Gm. Syst. Nat. i. p. 658 [2].

Macrorhamphus griseus, Scl. & Salv. Ibis, 1860, p. 277 [3]; Lawr. Ann. Lyc. N. Y. vii. p. 479 [4]; Salv. Ibis, 1865, p. 191 [5]; 1889, p. 379 [6]; Dresser, Ibis, 1866, p. 36 [7]; v. Frantzius, J. f. Orn. 1869, p. 377 [8]; Dugès, La Nat. i. p. 142 [9]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 196 [10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 85 [11]; Elliot, N. Amer. Shore-Birds, p. 53 [12]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 394 [13].

Macrorhamphus scolopaceus, Lawr. Ann. Lyc. N. Y. ix. p. 141 [14]; Mem. Bost. Soc. N. H. ii. p. 308 [15]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 86 [16]; Elliot, N. Amer. Shore-Birds, p. 57 [17].

Macrorhamphus griseus, var. *scolopaceus*, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 46 [18]; Sumichr. La Nat. v. p. 232 [19].

Ereunetes griseus, Seebohm, Geogr. Distr. Charadr. p. 396 [20].

Ereunetes griseus scolopaceus, Seebohm, t. c. p. 398 [21].

Ptil. hiem. Supra grisescenti-brunneus, tectricibus alarum anguste albo marginatis, primariis nigricantibus, secundariis brunneis, extus et ad apicem albo late marginatis, secundariis intimis longioribus brunneis; dorso postico et uropygio albis, plumis medialiter nigro maculatis; supracaudalibus rectricibusque albis, nigro transfasciatis, medianis irregulariter albo notatis; pileo dorso concolore; fascia supralorali alba supra oculum producta; loris fuscescenti-brunneis; facie laterali et gutture albidis, griseo-brunneo lineatis; gutture imo, præpectore et pectore summo et laterali grisescenti-brunneis, his griseo maculatis; corpore reliquo subtus albo, hypochondriis et subcaudalibus, subalaribus et axillaribus griseo- vel nigricanti-brunneo fasciatis: rostro saturate olivaceo; pedibus flavicanti-olivaceis; iride rufescenti-corylina. Long. tota circa 9·0, alæ 5·5, caudæ 2·2, culm. 2·4, tarsi 1·5. (Descr. avis adultæ ex Dueñas. Mus. nostr.)

Ptil. æstiv. Nigricans, rufo variegatus: subtus cinnamomeus, gutture, præpectore et corporis lateribus nigro maculatis. (Descr. feminæ adultæ ex Zacatecas. Mus. nostr.)

Hab. North America, breeding in the Arctic Regions, migrating south in winter [11] [16]. —Mexico, east coast (*Sumichrast* [19]), Matamoros (*Dresser* [7]), Mazatlan (*Grayson* [15]), Guanajuato (*Dugès* [9]), Zacatecas, San Luis Potosi (*Richardson* [13]), San Mateo, Tehuantepec (*Sumichrast* [18] [19]), Cozumel I. (*Gaumer* [6] [13]); Guatemala, Chiapam (*O. S.*[5] [13]), Lake of Dueñas, San Gerónimo (*O. S. & F. D. G.*[13]); Costa Rica (*v. Frantzius* [9] [14]), Alajuela (*Underwood, in litt.*); Panama (*M'Leannan* [4]).—Colombia [13]; Brazil [13]; West Indies [13].—Incidental in Europe [13].

Two races of *M. griseus* are recognized by American ornithologists, the true *M. griseus* being considered to be the Eastern form, and *M. scolopaceus* the Western. In the 'Catalogue of Birds' Dr. Sharpe has given the dimensions of the bill in a large series of specimens, and has shown that the longer bill of the Western birds is often equalled by that of examples from Eastern North America, and he comes to the conclusion that they cannot be separated [13].

Taking the two as belonging to one species, the Red-breasted Snipe breeds in Arctic America and passes through the United States on migration. It apparently arrives at the latter end of the summer, like other Waders which breed in the far north, for Mr. Dresser noticed *M. griseus* at Matamoros on the 29th of June; from that time onwards the birds continued to appear, some migrating further south, but a considerable number remaining in the neighbourhood. He shot specimens both in the grey and in the red plumage [7]. At Mazatlan, Grayson found the species by no means abundant, making its appearance in October and remaining for a short time only [15], while Sumichrast met with it in Tehuantepec in August and February [19]. Salvin records that he observed it in numbers on the sandbanks of Chiapam, on the Pacific side of Guatemala [5].

The habits on migration of *Macrorhamphus*, as given by Mr. Elliot [12], seem to be remarkably like those of the European Godwits. He says that when the flocks pass at any height they are difficult to decoy by an imitation of their whistle; but if they descend to the ground their unsuspicious nature often leads them to settle close to the decoy-birds, when they fall easy victims to the gunner, as they frequently return to the same spot after having been fired at. Although supposed to have some affinity with the true Snipes (*Gallinago*), the habits of *Macrorhamphus* are those of Sandpipers, with which it is accustomed to associate. Mr. Dresser says that near Matamoros he found *M. griseus*, in company with other Sandpipers, on the shores of the lagoons, and in Guatemala Salvin always saw it in the open, where there was no cover whatever, its habits strongly contrasting in this respect with those of the Common Snipe [5].

The nest is merely a depression amongst moss, with a slight lining of leaves and grass; it is found on the marshy shores of the lakes in the Arctic Regions. The eggs are four in number, of a drab- or fawn-colour, with shadings of rufous or olivaceous, covered with chocolate and sepia markings, most numerous on the larger end [12].

MICROPALAMA.

Micropalama, Baird, Birds N. Amer. p. 726 (1858); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 401 (1896).

This genus belongs to the group of Tattlers and Sandpipers, in which the bill, though of fair length, is not Snipe-like as in *Macrorhamphus*, and is not so long as the tail. In *Micropalama* the bill is long and slender, slightly widened at the tip, which is

pitted as in the last-named genus. Both the outer and inner toes are united by a distinct basal membrane to the middle toe.

Only one species, *M. himantopus*, is known, breeding in temperate North America, and migrating south in winter through our region and the West Indies to South America.

1. Micropalama himantopus.

Tringa himantopus, Bp. Ann. Lyc. N. Y. ii. p. 157 [1].

Micropalama himantopus, Scl. & Salv. Ibis, 1859, p. 229 [2]; Scl. P. Z. S. 1862, p. 369 [3]; Dresser, Ibis, 1866, p. 37 [4]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 47 [5]; Sumichr. La Nat. v. p. 232 [6]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 201 [7]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 178 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 86 [9]; Elliot, N. Amer. Shore-Birds, p. 61 [10]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 401 [11].

Ereunetes himantopus, Seebohm, Geogr. Distr. Charadr. p. 400 [12].

Ptil. hiem. Speciei præcedenti similis, sed minor, uropygio et supracaudalibus albis, brunneo striolatis nec transfasciatis; rectricibus cineraceis, medialiter albis, minime nigro transfasciatis distinguenda. Long. tota circa 7·5, alæ 5·1, caudæ 2·15, culm. 2·0, tarsi 1·75. (Descr. avis adultæ ex Mexico. Mus. nostr.)

Ptil. æstiv. gutture toto brunneo striolato, corpore reliquo transfasciato, notæo nigro et rufo variegato, regione parotica et pilei postici lateribus cinnamomeis distinguenda. Long. tota 8·0, alæ 5·0. (Descr. maris adulti ex Momotombo. Mus. nostr.)

Hab. Eastern North America, breeding north of the United States [9].—Mexico [3], Matamoros (*Dresser* [4]), Zacatecas (*Richardson* [11]), Laguna del Rosario, State of Tlaxcala (*Ferrari-Perez* [8]), San Mateo, Tehuantepec (*Sumichrast* [5 7]); Guatemala, Dueñas (*O. S.*[2] [11]); Nicaragua, Momotombo (*Richardson* [11]).—South America generally in winter [11]; West Indies [11].

The Stilt-Sandpiper does not breed so far north as some of the other Wading-birds which nest only in the Arctic Regions; but it is found during the breeding-season in Temperate and sub-Arctic North America, wintering in the Neotropical Region. It appears to pass on migration not only along both the Atlantic and Pacific coast-lines, but also through the interior of Central and South America.

The records of the occurrence of this species within our limits are not numerous. Mr. Dresser [4] procured several specimens near Matamoros on the autumnal migration, when they were seen in company with *Macrorhamphus griseus*. We procured one example at Dueñas, shot out of a flock of *Tringa pectoralis*.

M. himantopus occurs on the eastern coast of the United States, where small flocks frequent the mud-flats, associating with other small Sandpipers. It is said to wade deep in the water, and to sweep with its bill for food, after the manner of an Avocet [10].

The nest is described as a mere depression in the ground, lined with leaves and grass. The eggs are pale greyish-white, with dark brown markings, which are more numerous at the larger end.

SYMPHEMIA.

Symphemia, Rafin. Journ. de Phys. lxxxviii. p. 417 (1819); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 405 (1896).

Symphemia belongs to the group of Sandpipers known as Tattlers (*Totanus* and the allied genera). All these birds have a longer tarsus than the more typical and shorter-billed Sandpipers, such as *Bartramia*, *Pavoncella*, *Tringoides*, &c. The bill is slightly decurved at the tip, and the legs are rather long, the tarsus being longer than the middle toe and claw. The genus is distinguished from its allies by having the outer and inner toes joined to the middle one by a web at the base.

Only a single species is known, *S. semipalmata*, which breeds in Temperate North America, and visits our region, the Antilles, and the northern coasts of South America in winter.

1. Symphemia semipalmata.

Semipalmated Snipe, Penn. Arctic Zool. ii. p. 469, t. 20. fig. 2 [1].

Scolopax semipalmata, Gm. Syst. Nat. i. p. 659 [2].

Symphemia semipalmata, Scl. P. Z. S. 1860, p. 253 [3]; Salv. Ibis, 1865, p. 190 [4]; Ibis, 1866, p. 198 [5]; Ibis, 1889, p. 379 [6]; Dresser, Ibis, 1866, p. 37 [7]; Lawr. Ann. Lyc. N. Y. ix. p. 210 [8]; Mem. Bost. Soc. N. H. ii. p. 309 [9]; Bull. U. S. Nat. Mus. no. 4, p. 47 [10]; Sumichr. La Nat. v. p. 232 [11]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 285 [12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 94 [13]; Elliot, N. Amer. Shore-Birds, p. 131 [14]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 405 [15]; Oates, Cat. Eggs Brit. Mus. ii. p. 41 [16].

Totanus semipalmatus, Seebohm, Geogr. Distr. Charadr. p. 358 [17].

Symphemia semipalmata inornata, Brewster, Auk, iv. p. 145 [18]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 95 [19].

Ptil. hiem. Supra cineracea concolor; tectricibus minimis fuscescentioribus, medianis et majoribus dilute cineraceis vel sepiariis, albo late marginatis, et fusco vermiculatis; remigibus brunneis, basin versus albis, secundariis albis, his intimis dorso concoloribus; supracaudalibus albis, longioribus pallide cinereis, fusco vermiculatim fasciatis; rectricibus cineraceis, extimis albis fusco vermiculatim fasciatis; loris fuscis; facie laterali et colli lateribus pallide cineraceis; corpore subtus toto albo, lateribus pallide cineraceis; subalaribus et axillaribus nigricantibus, margine alari albo: rostro pallide cyaneo, apicem versus fusco; pedibus pallide cyaneis, unguibus nigris; iride brunnea. Long. tota circa 14·5, alæ 8·0, caudæ 3·1, culm. 2·5, tarsi 2·45. (Descr. avis adultæ ex Tehuantepec. Mus. nostr.)

Ptil. æstiv. Supra variegata, cinerea, paullo vinaceo tincta, plumis medialiter nigris vel nigro transfasciatis; facie laterali et gutture albis, minute nigro striolatis; præpectore et pectore summo et laterali rufescenti tinctis, nigricanti-brunneo fasciatis. Long. tota circa 13·0, alæ 7·8, culm. 2·3. (Descr. maris adulti ex Brownsville, Texas. Mus. nostr.)

Hab. North America, breeding throughout its range [13 19].—Mexico, Matamoros, Boca Grande (*Dresser* [6]), Mazatlan (*Grayson* [9], *Bischoff* [9]), Presidio, Tres Marias Is. (*Forrer* [15]), San Blas, Tepic (*Richardson* [15]), San Mateo, Tehuantepec (*Sumichrast* [10 15]), Orizaba (*Sallé* [3]), Merida, Yucatan (*Schott* [8]), Cozumel I. (*Gaumer* [6 15]); Guatemala, Chiapam), San José (*O. S.* [4 5 15]); Honduras, San Pedro (*Whitely* [15]).

—South America in winter [15]; West Indies [15]; Bahama Is. [15].—Incidental in Europe [15].

Two races of *Symphemia* are recognized by American ornithologists, an Eastern and a Western. The former, the true *S. semipalmata*, inhabits Eastern Temperate North America, breeding from Florida to New Jersey [13], while the Western bird, *S. inornata* of Brewster, is found in Western North America, east to the Mississippi Valley and the Gulf States, breeding from Texas to Manitoba, and found sparingly during migration along the coast of the Southern Atlantic States [19]. Mr. Seebohm [17], however, could not separate these two races, finding intermediate specimens; and Dr. Sharpe agrees with him that only one form can be properly distinguished [15].

Grayson says that at Mazatlan the "Willet" is common throughout the entire year, from which we may infer that it breeds in Western Mexico. The species has been found in Guatemala in winter, as Salvin procured a specimen at San José [15] and noticed it at Chiapam and in the lagoons of the Pacific coast [4 5].

S. semipalmata is mostly found in small flocks, and is a shy and wary bird when frequenting the marshes, and in habits appears to be not unlike the Godwits, retiring to fields and open grounds when the tide covers its feeding-places. It may also be noticed on sand-spits, either singly or a few together, not allowing any near approach. In the breeding-season the bird becomes much tamer, and will swoop down on any one who approaches its nest. The latter is a mere depression in a tussock of grass. The eggs (four in number) vary in colour, from pale greyish-green to pale buff or brownish-buff, spotted or blotched with yellowish-brown, umber, or dark chocolate-brown, with some underlying spots of inky purple, the spots being generally more thickly collected round the larger end [14 16].

TOTANUS.

Totanus, Bechst. Orn. Tasch. ii. p. 282 (1803); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 409 (1896).

The true Tattlers have the tarsus longer than the middle toe and claw, as in the preceding genus, but only the outer toe is joined to the middle one by a distinct web, and there is scarcely any indication of a web between the base of the inner and middle toes. The tarsus is longer than the middle toe and claw, being more than one and a half times as long as the toe. The bill, as in *Symphemia*, is slightly deflected towards the end.

Members of the genus *Totanus* are found over the entire globe, nesting in the sub-arctic and temperate areas of both Northern Hemispheres, and travelling south in winter. Two species are peculiar to America, and both of these occur in winter within our limits.

1. Totanus melanoleucus.

Stone Snipe, Penn. Arctic Zool. p. 468 [1].

Scolopax melanoleuca, Gm. Syst. Nat. i. p. 659 [2].

Totanus melanoleucus, v. Frantz. J. f. Orn. 1869, p. 377 [3]; Nutting, Pr. U. S. Nat. Mus. vi. p. 379 [4]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 269 [5]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 178 [6]; Seebohm, Geogr. Distr. Charadr. p. 363 [7]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 93 [9]; Elliot, N. Amer. Shore-Birds, p. 117 [10]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 426 [11].

Glottis melanoleuca, Scl. P. Z. S. 1857, p. 215 [12].

Gambetta melanoleuca, Scl. & Salv. Ibis, 1859, p. 229 [13]; Scl. P. Z. S. 1860, p. 253 [14]; Lawr. Ann. Lyc. N. Y. vii. p. 479 [15]; ix. p. 141 [16]; Mem. Bost. Soc. N. H. ii. p. 309 [17]; Bull. U. S. Nat. Mus. no. 4, p. 47 [18]; Dugès, La Nat. i. p. 142 [19]; Salv. P. Z. S. 1870, p. 219 [20]; Sumichr. La Nat. v. p. 232 [21].

Ptil. hiem. Supra cinerascenti-brunneus, plumis nonnullis nigro et albo minute notatis; tectricibus alarum majoribus et secundariis eodem modo fasciatim notatis; supracaudalibus albis, longioribus fusco anguste fasciatis; rectricibus cinerascenti-brunneis, fusco extus dentatis, extimis intus albis brunneo fasciatis vel vermiculatis; loris et supercilio indistincto albis, illis nigro maculatis; regione parotica brunnescente; genis et corpore subtus pure albis, præpectore brunneo striolato; subalaribus et axillaribus albis, brunneo transfasciatis: rostro nigro, ad basin cærulescenti-griseo; pedibus læte flavis, unguibus brunnescenti-nigris; iride saturate brunnea. Long. tota circa 12·0, alæ 7·8, caudæ 2·9, culm. 2·35, tarsi 2·45. (Descr. feminæ adultæ ex Chiapam. Mus. nostr.)

Ptil. æstiv. Supra cinerascenti-brunneus, plumis medialiter nigris et albido dentatim maculatis, supracaudalibus albis nigro transfasciatis; collo, præpectore et corporis lateribus nigro striolatis vel maculis cordiformibus notatis. (Descr. maris adulti ex Puebla. Mus. nostr.)

Hab. North America, breeding from Iowa and Northern Illinois northward [9].—Mexico [21], Sonora (*Robinette* [8]), Presidio de Mazatlan (*Forrer* [11]), Colima (*Xantus* [17]), Guanajuato (*Dugès* [19]), Santana, Guadalajara (*Lloyd* [11]), San Mateo, Tehuantepec (*Sumichrast* [18]), Orizaba (*Botteri* [12], *Sallé* [14]), Atotonilco [11], Nativitas and Laguna del Rosario, Tlaxcala (*Ferrari-Perez* [6]), Progreso, N. Yucatan (*Gaumer* [11]); Guatemala, Dueñas (*O. S.* [11 13]), Chiapam (*O. S.* [11]), Atitlan (*Richardson* [11]); Nicaragua, San Juan del Sur, Pacific coast (*Nutting* [4]), Momotombo (*Richardson* [11]); Costa Rica, San José (*v. Frantzius* [3], *Zeledon* [11], *Carmiol* [16], *Calleja* [16]), Punta Arenas, Laguna de Cartago (*Underwood, in litt.*); Panama, Chitra (*Arcé* [11 20]), Lion Hill (*M'Leannan* [11 15]).—South America generally [11]; West Indies [11].

The present species does not extend so far north during the breeding-season as its smaller relative, *T. flavipes*, and it nests in some of the more northern United States, wandering south in winter into the Neotropical Region. On its southward journey it passes by both coasts, as well as through the interior of Central America, and was found to be common on the Pacific coast of Nicaragua by Mr. Nutting [4]. We met with it at Dueñas in Guatemala, where the bird seemed to prefer the lake-side to the marshy resort of the other species of Waders, and it usually occurred singly.

The breeding-range of the "Greater Yellow-legs," as this Tattler is called in the United States, will probably be found more extensive than has been hitherto supposed. Mr. Elliot thinks that it may possibly breed in California [10], as well as in Argentina, where *T. melanoleucus* from North America spends the winter, departing northward in March; a second invasion thereupon takes place from the south, where the species is said to come for winter-quarters, after having nested in the extreme south of the Neotropical Continent.

On its southward migration, this bird frequents tidal rivers and natural harbours, feeding on the mud-flats, either singly or in small companies, devouring insects, worms, and minute crustacea. The eggs are four in number, deposited in a slight depression of the ground, sparsely lined with grass, and near the water; they are greyish-white, and spotted with various shades of brown and lilac, covering the surface, the markings being most numerous at the larger end.

2. Totanus flavipes.

Yellowshanks, Penn. Arctic Zool. ii. p. 468 [1].

Scolopax flavipes, Gm. Syst. Nat. i. p. 659 [2].

Totanus flavipes, Licht. Preis-Verz. Mex. Vög. p. 3 [3]; Cab. J. f. Orn. 1863, p. 59 [4]; v. Frantz. J. f. Orn. 1869, p. 377 [5]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 273 [6]; Salv. Ibis, 1889, p. 379 [7]; Ridgw. Pr. U. S. Nat. Mus. x. p. 578 [8]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526 [9]; A. O. U. Check-l. N. Amer. Birds, p. 93 [10]; Elliot, N. Amer. Shore-Birds, p. 119 [11]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 431 [12]; Oates, Cat. Eggs Brit. Mus. ii. p. 44 [13].

Gambetta flavipes, Scl. P. Z. S. 1859, p. 393 [14]; Scl. & Salv. Ibis, 1859, p. 229 [15]; Lawr. Ann. Lyc. N. Y. vii. p. 334 [16]; ix. pp. 141 [17], 210 [18]; Mem. Bost. Soc. N. H. ii. p. 309 [19]; Bull. U. S. Nat. Mus. no. 4, p. 47 [20]; Dresser, Ibis, 1866, p. 38 [21]; Dugès, La Nat. i. p. 142 [22]; Sumichr. La Nat. v. p. 233 [23].

Ptil. hiem. *T. melanoleuco* similis, sed valde minor. Long. tota circa 9·5, alæ 6·0, caudæ 2·4, culm. 1·55, tarsi 1·95. (Descr. maris adulti ex Progreso, Yucatan. Mus. nostr.)

Ptil. æstiv. sicut in *T. melanoleuco* coloratus, sed crassitie valde minore. (Descr. maris adulti ex Momotombo, Nicaragua. Mus. nostr.)

Hab. North America generally, breeding in the temperate and subarctic districts [10]. —Mexico [23] (*Deppe & Schiede* [3 4]), Matamoros (*Dresser* [21]), Mazatlan (*Grayson* [19]), Zacatecas (*Richardson* [12]), Guanajuato (*Dugès* [22]), Chimalpa (Tacubaya), Atotonilco (Huejotzingo), Ixtapalapa (Tlalpam) (*Ferrari-Perez* [12]), Playa Vicente, Vera Cruz (*Boucard* [14]), San Mateo, Tehuantepec (*Sumichrast* [20]), Progreso, N. Yucatan (*Schott* [18], *Gaumer* [12]), Cozumel I., Holbox I. (*Gaumer* [7 12]); Guatemala, Dueñas (*O. S.* [12 15]); Nicaragua, Momotombo (*Richardson* [12]), Rio Escondido [9]; Costa Rica (*v. Frantzius* [5]), San José (*Calleja* [17], *Carmiol* [17]), Alajuela, Laguna de Cartago (*Underwood, in litt.*); Panama (*M'Leannan* [12 16]).—South America generally in winter [12]; West Indies [12]; Swan I. [8].

T. flavipes appears to be almost identical in habits with *T. calidris* of Europe. It is a migrant in Central and South America, but nowhere occurs in any numbers, though generally distributed, being found on the coasts, inland rivers, and lakes. In every respect it is a miniature of *T. melanoleucus*, and its food is similar to that of other species of the genus.

The nest is a depression in the ground, lined with a few leaves and twigs, and the eggs, four in number, are described by Mr. Elliot as pyriform in shape, of a light drab-colour or brown, blotched with chocolate or rufous, sometimes with a much paler tint [11].

HELODROMAS.

Helodromas, Kaup, Natürl. Syst. p. 144 (1829); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 437 (1896).

The present genus is closely allied to *Totanus*, and only differs in its shorter tarsus, which is slightly longer than the middle toe and claw. The species have consequently a more squat and heavy appearance, lacking the slender build and graceful actions of the typical Tattlers and Redshanks.

Two species are known: the Green Sandpiper (*H. ochropus*) of Northern Europe and Asia, which migrates in winter to Africa, India, and the Malay Archipelago; and *H. solitarius* of North America, which resorts to Central and South America on its migrations.

1. Helodromas solitarius.

Tringa solitaria, Wilson, Amer. Orn. vii. p. 53, t. 58. fig. 3 [1].

Totanus solitarius, Licht. Preis-Verz. Mex. Vög. p. 3 [2]; Cab. J. f. Orn. 1863, p. 59 [3]; Scl. P. Z. S. 1856, p. 310 [4]; v. Frantz. J. f. Orn. 1869, p. 377 [5]; Seebohm, Geogr. Distr. Charadr. p. 367 [6]; Salv. Ibis, 1889, p. 379 [7]; Cherrie, Auk, 1892, p. 329 [8]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [9]; Elliot, N. Amer. Shore-Birds, p. 124 [10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 94 [11]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526 [12]; Underwood, Ibis, 1896, p. 449 [13].

Rhyacophilus solitarius, Scl. & Salv. Ibis, 1859, p. 229 [14]; P. Z. S. 1864, p. 372 [15]; 1870, p. 838 [16]; Scl. P. Z. S. 1860, p. 254 [17]; 1864, p. 178 [18]; Lawr. Ann. Lyc. N. Y. vii. p. 334 [19]; ix. p. 141 [20]; Mem. Bost. Soc. N. H. ii. p. 309 [21]; Bull. U. S. Nat. Mus. no. 4, p. 47 [22]; Dresser, Ibis, 1860, p. 38 [23]; Salv. P. Z. S. 1870, p. 219 [24]; Sumichr. La Nat. v. p. 233 [25]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 278 [26].

Helodromas solitarius, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 444 [27].

Totanus chloropygius, Wagler, Isis, 1831, p. 521 [28].

Totanus solitarius cinnamomeus, Brewster, Auk, vii. p. 377 [29]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [30]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 94 [31].

Helodromas cinnamomeus, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 760 [32].

Ptil. hiem. Supra brunneus, alis maculis paucis rufescentibus notatis; uropygio dorso concolore, supracaudalibus lateralibus et rectricibus albo transfasciatis, rectricibus medianis dorso concoloribus; loris et

regione parotica brunneis; fascia supralorali et palpebris albis; facie laterali albida, brunneo lineata; gula et corpore reliquo subtus albis, collo laterali et pectoris summi lateribus brunneis; gutture imo et præpectore brunneo striolatis; subalaribus et axillaribus nigricantibus, illis albo marginatis, his regulariter albo transfasciatis: rostro virescenti-nigro; pedibus virescenti-cinereis; iride brunnea. Long. tota circa 8·0, alæ 5·5, caudæ 2·2, culm. 1·35, tarsi 1·3. (Descr feminæ adultæ ex Dueñas. Mus. nostr.)

Ptil. æstiv. ptilosi hiemali similis, sed ubique albo maculatim notatus, pileo quasi striolato: subtus pure albus, gutture imo nigro striolato. Long. tota 7·6, alæ 5·2. (Descr. feminæ adultæ ex Brownsville, Texas. Mus. nostr.)

Hab. NORTH AMERICA, breeding occasionally in the Northern United States, more commonly northward (*H. solitarius*) [11]; Pacific coast-region, eastward to the Plains (*H. cinnamomeus*) [31].—MEXICO [25] (*Wagler* [28], *Deppe & Schiede* [2 3]), San Diego [9] and Cachuta [30], Sonora (*Robinette* [9]), Rio Grande, near Matamoros (*Dresser* [23]), Mazatlan (*Grayson* [21]), city of Mexico (*White* [18]), Tapana, Tehuantepec city (*Sumichrast* [22]), Sierra San Domingo, Tehuantepec, Aguas Calientes (*Richardson* [27]), Cuajimalpa (Tacubaya), Las Vigas, Puebla, Playa Vicente, Vera Cruz (*Ferrari-Perez* [27]), Cordova (*Sallé* [4 17]), N. Yucatan, Holbox I. (*Gaumer* [27]), Tabi (*F. D. G.* [27]); BRITISH HONDURAS (*Blancaneaux* [27]); GUATEMALA (*Skinner* [14]), San Gerónimo, Dueñas (*O. S.* [11 14]); HONDURAS, San Pedro (*Whitely* [16]), Ruatan I. (*Gaumer* [7]); NICARAGUA, Rio Escondido (*Richmond* [12]); COSTA RICA (*v. Frantzius* [5]), San José (*Cherrie* [8], *Calleja* [20], *Carmiol* [20 27]), Volcan de Miravalles [13], Reventazon, Alajuela, Talamanca, Jiménez (*Underwood, in litt.*); PANAMA [15 19], Castillo [24], Volcan de Chiriqui (*Arcé* [27]), Lion Hill [24 27] (*M'Leannan*).—SOUTH AMERICA generally in winter [27]; WEST INDIES [27].

An Eastern and a Western race of the Solitary Green Sandpiper are recognized by American ornithologists, the Western bird, *H. cinnamomeus*, being an inhabitant of the Pacific coast, and distinguished by the cinnamon tint of the light spots on the plumage. Intermediate specimens between the Western and Eastern forms are not unfrequent, as is often the case between birds from the Atlantic and Pacific regions of North America; and as the existence of such specimens is admitted, we fail to see that two independent races can be upheld, though the interesting fact must be recorded that the Green Sandpipers from Western North America do show more rufescent spots than those from the eastern side.

Little is known of its nesting-habits, common though the bird may be, and it is probable that the Solitary Sandpiper, like its European ally (*H. ochropus*), builds in trees, and selects the deserted nest of some other species.

H. solitarius frequents the banks of tidal rivers and creeks, feeding on small crustacea and worms, like other birds of its class, and on migration is found inland.

HETERACTITIS.

Heteractitis, Stejneger, Auk, i. p. 236 (1884); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 449 (1896).

This genus, which belongs to the Tattlers, is not far removed from *Totanus*,

differing from it in having the tarsus decidedly shorter, and about equal in length to the middle toe and claw. The tibia is bare for a short space. The wing is somewhat pointed, the distance between the tips of the secondaries and those of the primaries being greater than the length of the tarsus.

Heteractitis is a very curious genus of Waders. Two species are known, *H. brevipes* and *H. incana*. The former breeds in Eastern Siberia and Kamtchatka, and winters in Australia, passing through China, Japan, and the Malay Archipelago on migration. *H. incana* is an American form, breeding in Alaska, passing along the western coast of the Nearctic Region, and wintering in the Pacific Islands and N.E. Australia. The nasal groove is longer in *H. incana* than in *H. brevipes*, and the tarsus is plated behind in the latter species and reticulated in *H. incana*. Intermediate specimens are met with, and Dr. Sharpe suggests that the two forms probably interbreed.

1. Heteractitis incana.

Ash-coloured Snipe, Lath. Gen. Syn. iii. pt. 1, p. 154[1].

Scolopax incana, Gm. Syst. Nat. i. p. 658[2].

Heteroscelis incanus, Salv. P. Z. S. 1883, p. 429[3]; Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 290[4].

Heteractitis incanus, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 95[5]; Elliot, N. Amer. Shore-Birds, p. 135[6]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 453[7].

Ptil. vix æstiv. Supra cinerascens, alis dorso concoloribus, primariis nigricantibus, rhachidibus brunneis vel albicanti-brunneis, cauda cinerea; supercilio angusto et facie laterali et colli lateribus albis, nigro lineatis; regione parotica cinerea; corpore subtus albo, gutture vix nigro maculato; præpectore et corpore reliquo subtus albis, nigricanti-cinereo transfasciatis, abdomine imo pure albo; subalaribus et axillaribus cinereis: rostro et pedibus sordide virescentibus; iride brunnea. Long. tota circa 10·0, alæ 7·1, caudæ 2·95, culm. 1·85, tarsi 1·2. (Descr. avis ad. ex Acapulco. Mus. nostr.)

Ptil. hiem. Supra sicut in ptilosi æstiva, sed corpore subtus magis concolore, minime nigro transfasciato, gutture, pectore medio, abdomine et subcaudalibus pure albis; gutture imo, pectoris lateribus et hypochondriis cinereis; subalaribus et axillaribus quoque cinereis. Long. tota 10·0, alæ 6·95. (Descr. maris adulti ex St. Michael's, Alaska. Mus. nostr.)

Hab. North America, Pacific coast from Alaska southward to Mexico[5].—Mexico, Acapulco (*Markham*[3 7]).—Oceania generally; N.E. Australia[7].

H. incana breeds in the extreme north, since it passes through the Aleutian and Seal Islands in May, June, and July, on its way to the more arctic regions. It returns by Alaska in August and September, and winters in the islands of Oceania, migrating apparently along the Pacific coast of North America and probably along the coast of Western Mexico, as a specimen was obtained by Admiral Markham at Acapulco in March 1880[3].

The Wandering Tattler, as this species has been very appropriately named by the American naturalists, affects rocky shores, either singly or in small parties of three or four individuals, flying from rock to rock when disturbed. Dr. Stejneger says that in appearance this bird resembles the Spotted Sandpiper, but that it does not flirt its tail or

move its head and neck in the same peculiar manner. The flight is graceful and rapid, and the voice loud and harsh, almost screaming [6].

The nest and eggs have not yet been discovered.

TRINGOIDES.

Tringoides, Bp. Sagg. distr. met. An. Vertebr. p. 58 (1831); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 456 (1896).

Tringoides belongs to the short-legged section of the Tattlers, in which the tarsus is about equal to the length of the middle toe and claw, and does not exceed the latter in dimensions. The bill is straight, as in *Totanus* and *Heteractitis*, from which the present genus differs in having the secondaries equal in length to the primaries, the distance between the tips of the two series of quills being much less than the length of the tarsus.

Only two species of *Tringoides* are known—the Common Sandpiper of Europe, *T. hypoleuca*, and the Spotted Sandpiper of America, *T. macularia*. Both breed in temperate regions, and migrate far to the south in winter.

1. Tringoides macularia.

The Spotted Tringa, Edwards, Glean. Nat. Hist. ii. p. 139 [1].
La Grive d'eau, Briss. Orn. v. p. 255 [2].
Tringa macularia, Linn. Syst. Nat. i. p. 249 [3].
Totanus macularius, Licht. Preis-Verz. Mex., Vög. p. 3 [4]; Cab. J. f. Orn. 1863, p. 59 [5].
Tringoides macularius, Scl. P. Z. S. 1857, p. 215 [6]; 1860, p. 254 [7]; 1864, p. 178 [8]; Scl. & Salv. Ibis, 1859, p. 230 [9]; P. Z. S. 1864, p. 372 [10]; Dresser, Ibis, 1866, p. 38 [11]; Lawr. Ann. Lyc. N. Y. ix. p. 142 [12]; Mem. Bost. Soc. N. H. ii. p. 309 [13]; Bull. U. S. Nat. Mus. no. 4, p. 48 [14]; v. Frantz. J. f. Orn. 1869, p. 377 [15]; Boucard, P. Z. S. 1878, p. 44 [16]; Salv. Cat. Strickl. Coll. p. 612 [17]; Ibis, 1885, p. 194 [18]; 1889, p. 379 [19]; Sumichr. La Nat. v. p. 233 [20]; Nutting, Pr. U. S. Nat. Mus. vi. p. 379 [21]; Baird, Brewer, and Ridgw. Water-Birds N. Amer. i. p. 301 [22]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 468 [23]; Oates, Cat. Eggs Brit. Mus. ii. p. 46 [24].
Actitis macularia, Ridgw. Pr. U. S. Nat. Mus. viii. p. 581 [25]; x. p. 584 [26]; Cherrie, Auk, 1892, p. 329 [27]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526 [28]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 97 [29]; Elliot, N. Amer. Shore-Birds, p. 149 [30]; Underw. Ibis, 1896, p. 449 [31].
Tringoides hypoleucus (nec L.), v. Frantz. J. f. Orn. 1869, p. 377 [32].
Tringoides sp., Scl. P. Z. S. 1856, p. 310 [33].

Ptil. hiem. Olivaceo-brunnea, rhachidibus nigricantibus indistinctis; tectricibus alarum et secundariis intimis dorso concoloribus; remigibus sepiariis, primariis intus albo notatis vix albido ad apicem fimbriatis, secundariis autem ad basin albis et albo latius terminatis; rectricibus dorso concoloribus, extimis albo terminatis, et albo nigroque late sed irregulariter fasciatis; loris fuscescentibus, fascia parva supralorali et palpebris albidis; facie laterali et pectoris lateribus brunneis; gutture et corpore reliquo subtus pure albis; subalaribus albis, harum minimis et tectricibus primariorum nigricantibus; axillaribus pure albis. Long. tota circa 6·6, alæ 4·1, caudæ 1·8, culm. 1·15, tarsi 0·9. (Descr. avis adultæ ex Panajachel. Mus. nostr.)

Ptil. æstiv. Supra olivaceo-brunnea, vix æneo adumbrata, fasciis transversis nigris ornata : subtus alba, fasciis et maculis nigris guttata : rostro viridescenti-olivaceo, mandibula flavicante, ad apicem brunnea ; pedibus pallide flavicanti-carneis ; iride coryllina. (Descr. avis adultæ ex Cozumel. Mus. nostr.)

Hab. North America to Alaska, breeding throughout its range, less common on the Pacific coast [29].—Mexico (*Deppe & Schiede* [4 5], *Sumichrast* [20], *Mann* [17]), Matamoros (*Dresser* [11 22]), Tamesi, Tampico (*Richardson* [23]), Rio de Iglesias, Chihuahua (*Lloyd* [23]), Colima (*Xantus* [13]), Zacatecas, Calotlan and Bolaños in Jalisco, Aguas Calientes, Chimalapa, and Tehuantepec (*Richardson* [23]), Dos Arroyos, Amula, and Acapulco in Guerrero, Teapa (*Mrs. H. H. Smith* [23]), near the city of Mexico (*White* [8]), Vera Cruz (*Sallé* [7 33]), Orizaba (*Botteri* [6]), Puebla, San Lorenzo, Cordova (*Ferrari-Perez* [23]), Laguna Verde, La Antigua, Sola, Juchatengo in Oaxaca (*Trujillo* [23]), San Mateo, Santa Efigenia, Tehuantepec city (*Sumichrast* [14]), Tizimin, N. Yucatan (*Gaumer* [23]), Cozumel I. (*De Vis* [18], *Benedict* [25], *Gaumer* [19 23]) ; Guatemala, Yzabal, Dueñas (*O. S. & F. D. G.* [23]), Panajachel (*Richardson* [23]), San Gerónimo (*O. S.* [9]) ; Salvador, La Libertad (*Richardson* [23]) ; Honduras, Truxillo (*Townsend* [26]), Ruatan I. (*Gaumer* [19 23]) ; Nicaragua, San Juan del Sur (*Nutting* [21]), Momotombo (*Richardson* [23]), Rio Escondido (*Richmond* [28]) ; Costa Rica [12 15], San José (*v. Frantzius* [32], *Cherrie* [27], *Boucard* [16], *Carmiol* [23]), Irazu district (*Rogers* [23]), San Lucas, Punta Arenas, Jiménez, Alajuela, Carrillo, Civita Simon, Miravalles [31] (*Underwood, in litt.*); Panama, Lion Hill (*M'Leannan* [10 23]).—South America generally to Brazil, Amazonia, Ecuador, and Peru [23] ; West Indies [23].—Incidental in Europe [23].

The Spotted Sandpiper closely resembles the common *T. hypoleuca* of Europe, and in its winter and young plumages can scarcely be distinguished from that species, excepting by the greater amount of yellow on the lower mandible and the presence of a broad subterminal band on all the secondaries: in *T. hypoleuca* the inner secondaries are for the most part white. In the breeding-plumage, however, *T. macularia* is easily distinguished from its eastern ally by having the under surface of the body thickly spotted with black.

It is a common bird in North America, and nests throughout the temperate area from the Atlantic to the Pacific, ascending to a considerable altitude in the Rocky Mountains. In Central America the species is known as a winter visitor, but Mr. Cherrie is of opinion that some individuals breed in Costa Rica [27]. In Guatemala we observed the Spotted Sandpiper about most of the rivers during the winter months, inhabiting both the tableland and the coast country [9]. It is reported as common in Nicaragua, both by Mr. Nutting [21] and Mr. Richmond, the latter having observed examples up to the 16th of May [28].

T. macularia arrives at its breeding-quarters in North America in April, and makes a slight nest of straw and grass, generally in some open spot on the bank of a lake or river, the parent birds afterwards showing extreme solicitude for the safety of their young. During migration it is found along the banks of rivers, either in family-parties

or singly, as well as along the creeks of natural harbours, and likewise on the sea-shore during the autumn passage. The flight is somewhat similar to that of the allied species, the bird skimming over the surface of the water for some distance without any motion of the wings except a few rapid beats, followed by another prolonged glide.

The eggs are four in number and pyriform in shape, with a considerable amount of gloss. The ground-colour varies from cream to pale buff, with spots and blotches of dark chocolate-brown or black and some underlying inky purple. The spots are small and numerous, and the blotches are frequently confluent over the larger end, where they sometimes form an irregular cap [24].

BARTRAMIA.

Bartramia, Less. Traité d'Orn. p. 553 (1831); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 509 (1896).

A genus peculiar to America, and remarkable for its short bill, which has a slight swelling of the dertrum, and long tail, the latter exceeding the culmen in length. The tarsus is long, measuring more than twice the length of the inner toe and claw. The tail is much graduated, the outer feathers falling short of the middle ones by as much as the length of the hind toe and claw. The feathers of the chin-angle are produced forwards, far beyond the line of the forehead.

One species only is known, *B. longicauda*, breeding throughout temperate North America, and visiting the southern continent in winter, at which season specimens have occurred in Europe and even in Australia.

1. Bartramia longicauda.

Tringa longicauda, Bechst. Kurze Uebers. Latham, p. 453, t. 184 [1].

Bartramius longicaudus, Bp. Rev. et Mag. Zool. 1857, p. 59 [2].

Bartramia longicauda, Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 296 [3]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 129 [4]; Herrera, La Nat. (2) i. pp. 186 [5], 328 [6]; Cherrie, Auk, ix. p. 329 [7]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 96 [9]; Elliot, N. Amer. Shore-Birds, p. 143 [10]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 509 [11]; Bangs, Auk, 1901, p. 358 [12]; Oates, Cat. Eggs Brit. Mus. ii. p. 50 [13].

Actiturus longicauda, Salv. Ibis, 1889, p. 379 [14].

Tringa bartramia, Wilson, Amer. Orn. vii. p. 63, t. 59. fig. 2 [15].

Actiturus bartramius, Scl. & Salv. Ibis, 1859, p. 230 [16]; P. Z. S. 1864, p. 372 [17]; Scl. P. Z. S. 1860, p. 253 [18]; Lawr. Ann. Lyc. N. Y. vii. p. 334 [19]; ix. p. 142 [20]; Salv. Ibis, 1864, p. 385 [21]; Dugès, La Nat. i. p. 142 [22].

Actiturus bartranici, Sumichr. La Nat. v. p. 232 [23].

Ptil. hiem. Nigricans, plumis singulis cinnamomeo vel arenario marginatis; tectricibus majoribus alarum, secundariis intimis et scapularibus nigro transfasciatis; tectricibus primariorum et primariis nigricantibus, his ad apicem vix albo fimbriatis et intus albo fasciatis; secundariis brunneis albo terminatis, extus fulvo indentatis, intus albido fasciatis; dorso postico, uropygio et supracaudalibus nigris, his lateralibus cinnamomeis albo terminatis et nigro fasciatis; rectricibus cinerascentibus, nigro transfasciatis, reliquis cinnamomeis, albo terminatis, et plus minusve regulariter nigro transfasciatis vel fasciatim maculatis;

pilei plumis nigris, arenario marginatis; loris et supercilio distincto fulvescenti-albis; facie laterali, præpectore et pectore summo nigro striolatis; genis et gula albis; corpore reliquo subtus albo, hypochondriis nigro fasciatis, pectoris lateribus nigro triquetrim fasciatis; subalaribus et axillaribus albis, nigro transfasciatis: rostro flavicanti-viridi, basin versus flavo; pedibus pallide flavicanti-griseis; iride coryllina. Long. tota circa 9·0, alæ 6·4, caudæ 3·2, culm. 1·2, tarsi 1·8. (Descr. maris adulti ex Pinal, Puebla. Mus. nostr.)

Ptil. æstiv. ptilosi hiemali similis, sed nigricantior, marginibus plumarum pallidis obsoletioribus, præpectore et pectore summo fasciis triquetris et cordiformibus notatis. (Descr. maris adulti ex Dueñas. Mus. nostr.)

Hab. North America, mainly east of the Rocky Mountains, north to Nova Scotia and Alaska, breeding throughout most of its range [9].—Mexico, Valley of Mexico (*Herrera* [5 6]), Guanajuato (*Dugès* [22]), Zacatecas, Chapala, Jalisco (*Richardson* [11]), Cacoprieto, Tapanatepec, Orizaba (*Sumichrast* [23]), Vera Cruz (*Sallé* [18]), Pinal, Puebla (*F. D. G. & Ferrari-Perez* [11]), Las Vegas, Jalapa (*Ferrari-Perez* [11]); British Honduras, Turneff I. (*O. S.*[21]); Guatemala, Dueñas ([11 16]), Sakluk [11] (*O. S.*); Honduras, Ruatan I., Bay of Honduras (*Gaumer* [11 14]); Nicaragua, Rio Escondido (*Richmond* [8]); Costa Rica (*Carmiol* [20]), Alajuela (*Zeledon* [4]), San José (*Cherrie* [7]); Panama (*M'Leannan* [11 17 19]), Divala, Chiriqui (*Brown* [12]).—South America in winter, to Amazonia, Peru, Brazil, Chile, Argentina, and Uruguay [11].

Bartram's Sandpiper resembles the true Plovers in many of its habits, and is one of the most interesting of all the Waders, being an inhabitant of the plains of North America, "rarely seen near water, in which it seldom, if ever, wades, frequenting grassy fields and prairie-like stretches." [10]. It breeds throughout the greater part of its North-American habitat east of the Rocky Mountains, and is seldom found on the Pacific coast. In Central America the species is only a winter visitor, passing through the Valley of Mexico in August and September [5]. In Costa Rica, Mr. Cherrie says that it was tolerably common at San José from about the 5th of September to the 14th of November [7]; and Mr. Richmond noticed the species on the Rio Escondido in Nicaragua on the 26th of the latter month [8]. In Guatemala a flock consisting of some eighteen or twenty individuals arrived at Dueñas on their return journey in the beginning of April. They frequented the open dry savannas, rather than the marshy pools, and fully justified the appellation of "Field-Plovers" [16].

B. longicauda, though seen at times in considerable numbers on the Atlantic coast of North America, is, according to Mr. Elliot, never met with in the great flocks observed in the Western States, like Kansas, and to the southward, more especially in Texas, where the bird congregates sometimes in thousands. As a rule, it is shy, except in the breeding-season, or in places where it has not been molested. He writes:—"It associates often at this time with the Golden Plover and others of the family found in similar localities, and may be seen scattered in groups or singly over the prairies" [10].

The nest is placed on the ground, being a mere depression, in some open spot on the prairie, generally near water; it is slightly lined with grass [10].

The eggs are four in number, mostly of a very broad-oval form, though some are narrow and lengthened, while others are pyriform. The ground-colour is creamy or buff, with small spots and blotches of umber-brown and underlying pale purple, collected somewhat towards the larger end of the egg, but not forming a cap.

EREUNETES.

Ereunetes, Illiger, Prodr. p. 262 (1811); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 514 (1896).

The present genus forms the connecting-link between the Tattlers and the Snipes and Sandpipers, being very much like the Stints in general appearance, but in structure agreeing with the Totaninæ. It belongs to the short-billed group of the latter subfamily, the culmen being less than the tail in length. The tarsus is short, not being so long as the tail. The bill is flattened, and somewhat widened towards the tip, and the feathers on the chin-angle extend nearly as far as the line of the frontal feathers. The outer and inner toes are connected to the middle toe by a very distinct basal web.

Two forms of this Sandpiper are recognized by American naturalists—an Eastern and a Western race, the latter being a larger bird, with a longer bill and more ruddy plumage. Dr. Bowdler Sharpe, however, asserts that every possible gradation exists between the two races, which occur together both in their summer and winter habitats.

1. Ereunetes pusillus.

La petite Alouette-de-Mer de S. Domingue, Briss. Orn. v. p. 222, t. 25. fig. 2 [1].

Tringa pusilla, Linn. Syst. Nat. i. p. 252 [2]; Licht. Preis-Verz. Mex. Vög. p. 3 [3]; Cab. J. f. Orn. 1863, p. 59 [4]; Wagler, Isis, 1831, p. 521 [5]; Scl. P. Z. S. 1856, p. 311 [6].

Ereunetes pusillus, Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 205 [7]; Ridgw. Pr. U. S. Nat. Mus. x. p. 578 [8]; Seebohm, Geogr. Distr. Charadr. p. 402 [9]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 90 [10]; Elliot, N. Amer. Shore-Birds, p. 98 [11]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 514 [12]; Oates, Cat. Eggs Brit. Mus. ii. p. 51, t. 2. figs. 6, 7 [13].

Ereunetes petrificatus, Scl. & Salv. Ibis, 1859, p. 229 [14]; Salv. Ibis, 1865, p. 191 [15]; 1889, p. 379 [16]; Dresser, Ibis, 1866, p. 37 [17].

Ereunetes occidentalis, Lawr. Pr. Acad. Philad. 1864, p. 107 [18]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [19]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 91 [20]; Elliot, N. Amer. Shore-Birds, p. 100 [21].

Ereunetes pusillus, var. *occidentalis*, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 47 [22]; Sumichr. La Nat. v. p. 232 [23].

Ereunetes pusillus occidentalis, Ridgw. Pr. U. S. Nat. Mus. iii. p. 200 [24]; Seebohm, Geogr. Distr. Charadr. p. 403 [25].

Ptil. hiem. Brunneus, rhachidibus indistincte nigris, supracaudalibus nigricantibus, his lateralibus albis; rectricibus duabus medianis nigricantibus, reliquis cinerascenti-brunneis; alis dorso concoloribus,

tectricibus majoribus albo terminatis; tectricibus primariorum et remigibus sepiariis, scapis primariorum fere albicantibus, secundariis intus albis, interioribus longissimis dorso concoloribus; loris fuscescentibus; fronte basali, facie laterali et corpore subtus toto pure albis, pectoris summi lateribus cinerascenti-brunneis et præpectore medio angustissime brunneo lineolato; subalaribus et axillaribus pure albis: rostro nigro, mandibula ad basin viridescenti-olivacea; pedibus viridescenti-olivaceis; iride saturate brunnea. Long. tota circa 5·8, alæ 3·9, caudæ 1·6, culm. 1·1, tarsi 0·8. (Descr. maris adulti ex Chiapam. Mus. nostr.)

Ptil. æstiv. Supra nigricans, cinnamomeo variegatus; præpectore et pectore summo et corporis lateribus nigricanti-brunneo fasciatim maculatis. (Descr. feminæ adultæ ex S. Barbara, California. Mus. nostr.)

Hab. North America, breeding in the Arctic and sub-Arctic Regions [12]. — Mexico (*Wagler* [5], *Deppe & Schiede* [3 4], *Sumichrast* [23]), Matamoros (*Dresser* [17]), Cachuta, Sonora (*Robinette* [19]), Hermosillo, Sonora (*Ferrari-Perez* [12]), Mazatlan (*Forrer* [12]), Cordova (*Sallé* [6]), San Mateo, Tehuantepec city (*Sumichrast* [22]), Cozumel I. (*Gaumer* [12 16]), Guatemala, Dueñas [14], Chiapam [15], Carranza [12], San José [12] (*O. S. & F. D. G.*); Panama (*M'Leannan* [12]).—South America in winter to Brazil and Peru [12]; Swan I. [8].

The breeding-habitat of *E. pusillus* is said to be "Eastern North America, north of the United States," and that of the race (*E. occidentalis*) is also given, in the A. O. U. 'Check-list,' as "chiefly the Western United States, frequent eastward to the Atlantic coast, breeding far north, and migrating in winter to Central and South America" [10 20].

The true *E. pusillus* is supposed to visit the West Indies and South America. When we were in Guatemala we met with both forms, and Salvin's note was to the effect that these Sandpipers were very common at Chiapam, on the Pacific coast. He writes:—"The variation in the length of the bill in this bird is very remarkable. Out of the same flock I have shot specimens with bills varying in length at least a quarter of an inch" [15]. It is evident, therefore, that both these supposed races are found in Guatemala during the winter, and the idea of their possessing an eastern and a western habitat at all seasons cannot be entertained. In the 'Catalogue of Birds,' Dr. Bowdler Sharpe has given the length of the bill in the large series of specimens in the British Museum, and has found every gradation between the long- and short-billed forms [12]. This seems to be an analogous case to that of the European Dunlin (*Pelidna alpina*), in which it is possible to obtain specimens with every variation in size of bill out of the same flock.

The account given of the nesting-habits of this Sandpiper in Alaska is very interesting and amusing. The male, springing into the air, and hovering for nearly a minute, pours forth to the female a series of rather musical trills, the wings at the same time vibrating with such continuous motion that they appear to keep time with the rapid notes. On migration the species assembles in large flocks, which frequent the tidal rivers and mud-creeks [11 21].

The nest is a depression amongst dried grass or in a tussock [11 21]. The eggs are four in number and pyriform in shape: Mr. Oates finds that there are two types

in the British Museum collection, one being pale buff, very thickly mottled and speckled with rich rufous-bronze, and the other of a greyish cream-colour, blotched and spotted with sepia, brown, and pale underlying purple [13].

Subfam. *SCOLOPACINÆ.*

This subfamily, which comprises several of the Sandpipers and the Snipes, differs from the Totaninæ in having the toes cleft to the base, without any connecting-web.

The species of this group, like those of the foregoing, are practically cosmopolitan in their distribution.

TRINGITES.

Tringites, Cab. J. f. Orn. 1856, p. 418; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 521 (1896).

In this genus the legs are decidedly long, the tarsus exceeding the culmen in length, and being longer than the middle toe and claw. In all the other members of the Scolopacinæ the tarsus does not exceed the dimensions of the bill. The inner webs of the primaries are mottled. The tail is long and doubly emarginate.

Only one species of *Tringites* is known, peculiar to the New World, nesting in the north, and visiting Central America on migration on its way south to its winter residence.

1. Tringites subruficollis.

Chorlito garganta blanca acanelada, Azara, Apunt. iii. p. 320 [1].

Tringa subruficollis, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 465 [2].

Tringites subruficollis, A. O. U. Check-l. N. Amer. Birds, p. 158 [3]; ibid. 2nd ed. p. 96 [4]; Cherrie, Auk, 1892, p. 329 [5]; Elliot, N. Amer. Shore-Birds, p. 145 [6]; Sharpe, Cat. Birds Brit. Mus. xxiv. pp. 521 [7], 766 [8]; Oates, Cat. Eggs Brit. Mus. ii. p. 51 [9].

Tringa rufescens, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 470 [10]; Seebohm, Geogr. Distr. Charadr. p. 446 [11].

Tringites rufescens, Cab. J. f. Orn. 1856, p. 418 [12]; Dresser, Ibis, 1866, p. 39 [13]; v. Frantz. J. f. Orn. 1869, p. 377 [14]; Dugès, La Nat. i. p. 142 [15]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 305 [16]; Salv. Ibis, 1889, p. 379 [17].

Ptil. hiem. Supra maculata, plumis nigris, arenario-rufo marginatis; ala spuria, tectricibus primariorum et remigibus brunneis, intus nigro irroratis, albido anguste terminatis, macula subterminali nigra; rectricibus medianis nigricantibus, reliquis brunneis rufescenti-albo terminatis, nigro sparsim irroratis et subterminaliter fasciatis; pileo arenario, nigro anguste striolato; facie laterali et corpore subtus pallide cinnamomeo-rufis, plumis indistincte albido marginatis, abdomine et subcaudalibus pallidioribus; subalaribus clare cinnamomeis, marginalibus ad basin seriatim nigris; tectricibus primariorum inferioribus et remigibus infra nigro marginatis: rostro sordide olivascenti-viridi; pedibus sordide flavicanti-viridibus; iride coryllina. Long. tota circa 7·4, alæ 5·2, caudæ 2·35, culm. 1·05, tarsi 1·35. (Descr. avis adultæ ex Ins. Ruatan. Mus. nostr.)

Ptil. æstiv. a ptilosi hiemali vix distinguenda, sed paullo rufescentior, et pectore summo laterali et præpectore maculis paucis nigris ornatis. (Descr. maris adulti ex Point Barrow. Mus. nostr.)

Hab. North America, especially in the interior; breeding in the Yukon district

and the interior of British North America, northward to the Arctic coast [4].—Mexico, Matamoros (*Dresser* [8 13 16]), Guanajuato (*Dugès* [15]); Honduras, Ruatan I. (*Gaumer* [8 17]); Costa Rica (*v. Frantzius* [14]), San José (*Cherrie* [5], *Underwood, in litt.*). —South America in winter, to Amazonia, Brazil, and Paraguay [8].—E. Siberia [8]. —Incidental in Europe [8].

The Buff-breasted Sandpiper is easily recognized by the black marbling on the inner surface of the quills. It breeds in the extreme northern parts of America, and migrates south in winter. During the latter season the species is met with in Central America, passing apparently by both the Atlantic and the Pacific coasts to the southern continent. On migration it occurs in flocks, and is found in abundance in some localities.

Like many other small Waders, *T. subruficollis* is somewhat demonstrative during the breeding-season, and goes through many curious evolutions, the males puffing out their breast, walking about with one wing uplifted, and soaring to a height of thirty feet with the legs hanging down [6].

The nest is a mere depression in the ground, lined with a little moss. The eggs are four in number, pyriform in shape, of a pale greenish-white, thickly and rather coarsely blotched with umber-brown and underlying pale purple, the blotches intermingled with some smaller markings [9].

CALIDRIS.

Calidris, Cuvier, Leçons Anat. Comp. t. ii. (1800); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 526 (1896).

Calidris belongs to a small section of the Scolopacinæ in which the culmen is of about the same length as the tarsus. The Little Stints (*Limonites*) are also nearly allied to the present genus, but the latter is easily recognized by the absence of a hind toe.

Only one species is known, cosmopolitan in its range, breeding in the Arctic Regions, and going south in winter.

1. Calidris arenaria.

The Sanderling, Albin, N. H. Birds, ii. p. 68 [1].

Tringa arenaria, Linn. Syst. Nat. i. p. 251 [2]; Seebohm, Geogr. Distr. Charadr. p. 431 [3].

Calidris arenaria, Illiger, Prodr. p. 249 [4]; Scl. P. Z. S. 1857, p. 230 [5]; 1859, p. 369 [6]; Scl. & Salv. Ibis, 1859, p. 229 [7]; Salv. Ibis, 1864, p. 386 [8]; 1889, p. 379 [9]; Lawr. Ann. Lyc. N. Y. ix. p. 210 [10]; Mem. Bost. Soc. N. H. ii. p. 308 [11]; Bull. U. S. Nat. Mus. no. 4, p. 47 [12]; Sumichr. La Nat. v. p. 232 [13]; Boucard, P. Z. S. 1883, p. 462 [14]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 249 [15]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 91 [16]; Elliot, N. Amer. Shore-Birds, p. 104 [17]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 526 [18]; Oates, Cat. Eggs Brit. Mus. ii. p. 52 [19].

Ptil. hiem. Supra margaritaceo-cinerea, plumis singulis cinereo-albo marginatis; dorso postico, uropygio et supracaudalibus medianis nigris vel nigro notatis; tectricibus alarum minimis nigris albo marginatis, medianis cinereis, majoribus late albo terminatis; tectricibus primariorum et primariis nigris, his intus albis, vel basin versus pogonii externi albis, rhachidibus albis; secundariis albis, externis apicem versus brunneis, intimis dorso concoloribus; rectricibus medianis nigricantibus, reliquis cineraceis, intus albidis, rhachidibus albis; pileo cinereo, plumis nigro anguste striolatis; loris, facie laterali et corpore subtus toto albis; subalaribus et axillaribus quoque albis: rostro et pedibus nigris; iride saturate brunnea. Long. tota circa 7·2, alæ 4·9, caudæ 2·0, culm. 1·2, tarsi 0·95. (Descr. avis adultæ ex Chiapam. Mus. nostr.)

Ptil. æstiv. Supra ferruginea, plumis medialiter nigris; facie laterali, gutture et præpectore totis et pectoris summis lateribus ferrugineis, nigro striolatis, his nigro fasciatis.

Hab. North America, probably nesting throughout the Arctic Regions, and known to breed in Grinnell Land [16 18].—Mexico (*Sumichrast* [13]), Mazatlan (*Grayson* [11]), San Blas, Tepic (*Richardson* [18]), San Mateo, Tehuantepec (*Sumichrast* [12]), Misantla, Santa Ana (*Ferrari-Perez* [18]), Jalapa (*Ferrari-Perez* [18], *de Oca* [6]), Santecomapam, Oaxaca (*Boucard* [5]), Progreso, Yucatan (*Boucard* [14]), Cozumel I. [9 18] (*Gaumer*), Merida (*Schott* [10]); British Honduras, Cays on the coast, Northern Two Cays, Lighthouse Reef (*O. S.* [8 15 18]); Guatemala, Carranza [18], Chiapam [18], Rio Nagualate [7] (*O. S.*).—South America, both coasts in winter, to Chile, Patagonia, and the Galapagos Is. [18]; Sandwich Is. [18].—Arctic Regions of Europe and Asia, to the coasts of Africa, India, and Australia in winter [18]; Iceland [18].

The Sanderling is a common visitor to the coasts of all countries of the Old and New Worlds during winter or on migration, but its breeding-haunts are in the Arctic Regions, and very few authentic eggs have been taken. It was found nesting in Grinnell Land by Colonel Feilden during the British Arctic Expedition under Sir George Nares, and it is believed to have bred in Iceland [19]. A nest was obtained by MacFarlane on the tundra east of Anderson River [17], and the species will probably be found to breed throughout the whole circumpolar region.

During the autumn migration the Sanderling is found in some numbers on the coasts of both hemispheres, passing southward to its winter-quarters. It seems also to winter in certain localities in Central America. Grayson says that the species is a wanderer at Mazatlan, being sometimes found in flocks on the beach in September, October, and the winter months [11]. Salvin met with it on the Pacific coast of Guatemala, where many individuals were frequently seen [7].

Wherever *C. arenaria* is found on its autumn migrations, it is generally noticed in flocks, keeping apart from the society of Dunlins and other Waders, and is recognizable by the amount of white which the bird displays when on the wing. Its habits otherwise resemble those of the small Sandpipers which frequent sea-beaches.

The nests, so far as hitherto discovered, consist of a depression in the open ground or in a dwarf willow, lined with decayed leaves or catkins. The eggs are four in number, "buffish or brownish-olive, faintly spotted with olive-brown or bistre, with

underlying marks of olive-grey, the markings being mostly at the larger end, but also pretty evenly distributed over the surface"[17].

LIMONITES.

Limonites, Kaup, Natürl. Syst. p. 37 (1829); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 537 (1896).

The genus *Limonites* consists of the true Stints. Although resembling *Calidris* in general appearance and habits, the Stints are easily distinguished by the presence of a hind toe. The tarsus and culmen are about equal in length, and the former is about as long as the middle toe and claw.

Five species are known, all breeding in the sub-arctic and temperate regions of the Old or New World, and migrating to the extreme south in winter.

1. Limonites minutilla.

Tringa minutilla, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 466[1]; Salv. Cat. Strickl. Coll. p. 609[2]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526[3]; Allen, Bull. Amer. Mus. N. H. v. p. 33[4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 89[5]; Elliot, N. Amer. Shore-Birds, p. 86[6].

Actodromas minutilla, Lawr. Mem. Bost. Soc. N. H. ii. p. 308[7]; Bull. U. S. Nat. Mus. no. 4, p. 47[8]; Sumichr. La Nat. v. p. 232[9]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 236[10].

Limonites minutilla, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 548[11]; Oates, Cat. Eggs Brit. Mus. ii. p. 53[12].

Tringa subminuta minutilla, Seebohm, Geogr. Distr. Charadr. p. 439[13].

Tringa wilsoni, Nutt. Man. ii. p. 121[14]; Scl. P. Z. S. 1860, p. 253[15]; 1864, p. 178[16]; Scl. & Salv. Ibis, 1859, p. 229[17]; Lawr. Ann. Lyc. N. Y. vii. p. 334[18]; Dresser, Ibis, 1866, p. 37[19]; v. Frantz. J. f. Orn. 1869, p. 377[20]; Dugès, La Nat. i. p. 142[21].

Ptil. hiem. Supra brunnea, plumis medialiter nigricantibus; uropygio et supracaudalibus nigris, his lateralibus et uropygii lateribus pure albis; rectricibus medianis nigricantibus, reliquis cineraceis; alis dorso concoloribus, tectricibus majoribus albo terminatis; remigibus nigricantibus, rhachidibus albis; secundariis intus basin versus albis, intimis dorso concoloribus; fronte basali et corpore subtus pure albis, facie laterali et præpectore cineraceis, rhachidibus fuscis vix notatis: rostro nigro; pedibus olivascenti-brunneis; iride saturate brunnea. Long. tota circa 5·2, alæ 3·3, caudæ 1·4, culm. 0·75, tarsi 0·7. (Descr. avis adultæ ex Patzcuaro. Mus. nostr.)

Ptil. æstiv. Supra nigricans, plumis rufo marginatis; facie laterali, gula ima et præpectore rufo lavatis, medialiter nigro striatis, pectoris lateribus maculis nigris marmoratis. Long. tota circa 6·0, alæ 3·5, caudæ 1·55, culm. 0·8, tarsi 0·75. (Descr. feminæ adultæ ex ins. Grenada. Mus. nostr.)

Hab. North America generally, breeding north of the United States[5].—Mexico[9], Matamoros (*Dresser*[11 19]), Tampico (*Richardson*[11]), Rio Urique, Chihuahua, Santana near Guadalajara (*Lloyd*[11]), Hermosillo, Sonora, Axotla, Cuajimalpa (Tacubaya), Ixtapalapa (Tlalpam), Atotonilco (Huejotzingo), Huatusco (*Ferrari-Perez*[11]), San Pedro and San Diego (*Robinette*[4]), Mazatlan (*Grayson*[7], *Bischoff*[7]), Manzanilla Bay (*Xantus*[7]), Zapotlan, Jalisco (*Richardson*[11]), Guanajuato (*Dugès*[21]), Valley of Mexico (*Le Strange*[11], *Ferrari-Perez*[11], *White*[16]), near the city of

Mexico [10] (*White* [16]), Vera Cruz (*Sallé* [15]), Sochiapa (*Trujillo* [11]), Patzcuaro and Hacienda de los Atlixcos (*F. D. G.* [11]), Orizaba (*fide Baird* [10]), Tehuantepec city (*Sumichrast* [8]), Progreso, N. Yucatan (*Gaumer* [11]); Guatemala (*Constancia* [2]), Dueñas, Chiapam (*O. S. & F. D. G.* [11]), Rio Nagualate, Pacific coast (*O. S.* [17]); Nicaragua, Rio Escondido (*Richmond* [3]); Costa Rica (*Endres* [11], *v. Frantzius* [20]), Rio Frio (*Richmond* [3]), San José (*Underwood, in litt.*); Panama (*M'Leannan* [11 18]). —South America in winter; Galapagos Is. [11].—Incidental in Europe [11].

The American Little Stint, as it occurs in Central America in winter, is distinguished from all other Sandpipers by its small size, and by its pectoral band of ashy-grey, the fore-neck and chest being grey, with dark shaft-streaks to the feathers.

In the breeding-season *L. minutilla* retires, like its congeners of Europe and Asia, to the Arctic Regions, being found from Labrador to Alaska. It migrates southwards by way of the shores and rivers of North America, and by both eastern and western coasts, to Central America, wintering there and on the southern continent, extending as far as Brazil, as well as to Peru on the western coast.

Salvin noticed the species at the mouth of the Rio Nagualate on the Pacific coast of Guatemala, where it occurred in some numbers in the month of March [17]. It apparently winters in Nicaragua, as Mr. Richmond obtained specimens in December and March [3].

Contrary to the habits of the Little Stints in Europe, where they are rather shy birds and by no means easy to procure during their migrations, the American species is said by Mr. Elliot to occur in flocks and to be confiding and gentle in disposition. In habits this bird resembles the other species of small Waders, and its food is similar [6].

The nest is said to be a depression in dry moss with a scanty lining of grass [6]. The eggs are four in number, pyriform, of a pale stone-grey colour, with small blotches, spots, and specks of dark brown, yellowish-brown, and underlying pale purple [12].

HETEROPYGIA.

Heteropygia, Coues, Proc. Acad. Philad. 1861, p. 191; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 561 (1896).

The members of the genus *Heteropygia*, a typical Neogæan form, resemble large Stints, and like them have a short bill scarcely exceeding the tarsus in length. In common with *Limonites* they possess a hind toe, but have a longer tarsus, exceeding the middle toe and claw in length.

Four species are known, one of which, *H. acuminata*, is an inhabitant of Eastern Siberia and occurs in Alaska, passing through Japan and China to winter in Australia and the Malay Archipelago; the remaining three occur in Central America.

1. Heteropygia maculata.

Tringa maculata, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 465 [1]; Scl. & Salv. Ibis, 1859, p. 229 [2]; Dresser, Ibis, 1866, p. 36 [3]; Ridgw. Pr. U. S. Nat. Mus. x. p. 578 [4]; Cherrie, Auk, 1892, p. 329 [5]; A. O. U. Check-l. N. Amer. Birds 2nd ed. p. 88 [6]; Elliot, N. Amer. Shore-Birds, p. 78 [7].

Actodromas maculata, Lawr. Ann. Lyc. N. Y. viii. p. 12 [8]; Bull. U. S. Nat. Mus. no. 4, p. 47 [9]; Scl. & Salv. P. Z. S. 1864, p. 372 [10]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 232 [11].

Heteropygia maculata, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 562 [12]; Oates, Cat. Eggs Brit. Mus. ii. p. 55 [13].

Tringa pectoralis, Say, in Long's Exped. Rocky Mts. i. p. 171 [14]; Scl. P. Z. S. 1856, p. 310 [15]; v. Frantz. J. f. Orn. 1869, p. 377 [16].

Tringa acuminata pectoralis, Seebohm, Geogr. Distr. Charadr. p. 443 [17].

Ptil. hiem. Supra brunnea, plumis medialiter nigricantibus; uropygio, supracaudalibus et rectricibus medianis nigris; dorsi imi lateribus et supracaudalibus nonnullis lateralibus albis, his nigro medialiter notatis; rectricibus reliquis cinerascenti-brunneis, ad apicem albo marginatis; supercilio indistincto et facie laterali albis, nigro lineatis; regione parotica rufescenti-brunnea nigro striolata; gula alba; gutture imo, præpectore et pectore summo rufescenti-brunneis, plumis singulis medialiter nigro striatis; corpore reliquo subtus pure albo, hypochondriis cinerascenti-brunneo lavatis, et rhachidibus nigris striolatis; subalaribus et axillaribus pure albis: rostro virescenti-nigro, ad basin mandibulæ olivaceo-viridi; pedibus ochracescenti-flavis; iride saturate brunnea. Long. tota circa 7·0, alæ 5·0, caudæ 2·0, culm. 1·15, tarsi 1·1. (Descr. feminæ adultæ ex Dueñas. Mus. nostr.)

Ptil. æstiv. vix a ptilosi hiemali distinguenda, sed magis rufescens.

Juv. ptilosi æstivæ avis adulti similis, sed supra magis rufescens, plumis conspicue rufo marginatis, scapularibus et interscapulii lateralis plumis albo conspicue limbatis; præpectore, sicut in adultis, conspicue striato. (Descr. av. hornot. ex Dueñas. Mus. nostr.)

Hab. North America, breeding in the Arctic Regions [6 12].—Mexico, Matamoros (*Dresser* [3 12]), Altamira, Tamaulipas [12], Zacatecas [12], Santa Rita, Chiapas (*Richardson*), San Baltazar (*Ferrari-Perez* [12]), Atlixco, Pinal, Puebla (*F. D. G. & Ferrari-Perez* [12]), Cordova (*Sallé* [15]), Tehuantepec city (*Sumichrast* [9]); Guatemala, Dueñas (*O. S.* [2 12]); Costa Rica (*v. Frantzius* [16]), San José (*Cherrie* [5]), Laguna de Cartago, Reventazon (*Underwood, in litt.*); Panama (*M'Leannan* [8 10]).—South America in winter, to Brazil, Peru, Chile, and Patagonia [12]; West Indies [12]; Swan I. [4].—Incidental in Europe [12].

The Pectoral Sandpiper breeds in the Arctic Regions of North America and migrates along both coasts of Central America to its winter home in the southern continent, reaching even as far south as Patagonia.

At Matamoros, Mr. Dresser noticed the species in July, so that it appears to start on its southern journey as soon as the breeding-season is over. He says that it did not frequent the lagoons, but was found on the banks of the Rio Grande or at small pools after rain. Salvin states that at Dueñas, in Guatemala, about the beginning of April, and towards the end of the dry season, a great part of the stream is diverted from the river Guacalate to irrigate the pastures, and that during this period numbers of Scolopacidæ frequent the inundated land, of which *H. maculata*

was the most abundant [2]. In Costa Rica Mr. Cherrie found that it arrived with Bartram's Sandpiper, and disappeared at the same time as the latter, being observed from September 5 to November 14 [5].

The present species is very similar in habits to the European Dunlin (*Pelidna alpina*), frequenting in the autumn mud-flats and saltings, often in flocks, distributing itself over the ground in search of worms and small molluscs, which appear to be the usual food of the smaller Waders. During the breeding-season, as recorded by Mr. Nelson, it has a curious habit of inflating the throat into a kind of sac, rising to some height in the air, and uttering hollow booming notes [7].

The nest is usually placed in a tuft of grass [7]. The eggs are four in number, pyriform and somewhat glossy, of a pale greyish-green colour, coarsely marked all over with spots and streaky blotches of umber-brown and underlying pale purple; the markings are confluent and form a cap at the larger end.

2. **Heteropygia bairdi.**

Actodromas bairdi, Coues, Proc. Acad. Philad. 1861, p. 194 [1]; Scl. P. Z. S. 1862, p. 369 [2]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 230 [3].

Tringa bairdii, Seebohm, Geogr. Distr. Charadr. p. 444 [4]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 88 [6]; Elliot, N. Amer. Shore-Birds, p. 83 [7].

Heteropygia bairdi, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 570 [8]; Oates, Cat. Eggs Brit. Mus. ii. p. 55, t. 2. fig. 4 [9].

Tringa deppii, Licht. Preis-Verz. Mex. Vög. p. 3 [10]; Cab. J. f. Orn. 1863, p. 59 [11].

Ptil. hiem. H. maculatæ similis, sed minor, pedibus nigris, hypochondriis concoloribus, minime striatis, et plaga præpectorali minus extensa distinguenda: rostro nigro; pedibus schistaceo-nigris; iride saturate brunnea. Long. tota circa 6·5, alæ 4·65, caudæ 1·85, culm. 0·9, tarsi 0·8. (Descr. avis adultæ ex Mexico. Mus. nostr.)

Ptil. æstiv. Supra nigricans, plumis rufo marginatis; plaga præpectorali magis rufescente et magis distincte nigro medialiter lineatis. Long. tota circa 7·0, alæ 5·0, caudæ 1·85, culm. 0·95, tarsi 0·9. (Descr. maris adulti ex Zacatecas. Mus. nostr.)

Hab. North America, chiefly in the interior, rare along the Atlantic coast, and not yet recorded from the Pacific side of the United States [6].—Mexico (*Deppe & Schiede* [10 11], *Parzudaki* [2]), Sonora (*Robinette* [5]), Aguas Calientes, Zacatecas (*Richardson* [8]), Tres Marias Is. (*Forrer* [8]), city of Mexico, Puebla, Las Vegas, Jalapa (*Ferrari-Perez* [8]).—South America generally in winter to Chile [8].—Incidental in S.W. Africa [8].

H. bairdi is smaller than *H. maculata*, the wing being less than five inches in length, and the dusky band on the fore-neck is less extensive; but the absence of streaks or mottlings on the sides of the body and the black legs will, however, distinguish it at all ages.

Its breeding-range extends far to the north, but in winter the bird appears to have a more western habitat than *H. maculata*.

On migration it is found chiefly in the interior of North America, and is more of an inland species than its allies, which it otherwise resembles in habits. The nest is a depression in the ground, lined with dead leaves. The eggs are four in number, pyriform in shape, and slightly glossy, of a pale stone-colour, very densely speckled, streaked, and blotched with rich chocolate-brown and pale underlying purple, these markings being more or less confluent and forming a cap at the larger end.

3. Heteropygia fuscicollis.

Tringa fuscicollis, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 461[1]; Salvin, Ibis, 1889, p. 379[2]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 88[3]; Elliot, N. Amer. Shore-Birds, p. 81[4].

Actodromas fuscicollis, Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 227[5].

Heteropygia fuscicollis, Sharpe, Cat. Birds Brit. Mus. xxiv. p. 574[6].

Tringa bonapartii, Seebohm, Geogr. Distr. Charadr. p. 445[7].

Ptil. hiem. speciebus similis præcedentibus, sed minor, et supracaudalibus albis facile distinguenda: rostro et pedibus nigricantibus; iride brunnea. Long. tota circa 6·5, alæ 4·7, caudæ 1·8, culm. 0·9, tarsi 0·75. (Descr. avis adultæ ex Argentina. Mus. Brit.)

Ptil. æstiv. Supra nigricans, plumis cinnamomeo marginatis, gutture minute, præpectore et corporis lateribus distincte nigro striolatis. (Descr. maris adulti ex Momotombo, Nicaragua. Mus. nostr.)

Hab. Eastern North America, breeding in the extreme north[3].—Mexico (*Boucard*[6]), Tizimin, N. Yucatan, Cozumel I. (*Gaumer*[2 6]); Nicaragua, Momotombo (*Richardson*[6]); Panama, Lion Hill (*M'Leannan*[6]).—South America to Patagonia and the Falkland Is.[6]; West Indies[6].

H. fuscicollis is a smaller species than the two foregoing, and is easily recognized by its white upper tail-coverts, which form a band between the rump and the tail.

It is a more eastern bird than its other North-American allies, breeding in the Arctic Regions from Greenland to the Mackenzie River, and even on migration and in its winter home keeping to the eastern side of Central and South America, though it has occurred in Amazonia and Central Peru, and is doubtless found in small numbers on the western coast of the southern continent. We never met with *H. fuscicollis* in Central America, and but few instances of its occurrence within our limits have been recorded.

In habits the present species appears to resemble the Common Dunlin, frequenting shores and mud-flats and assembling in flocks. It is recorded as being very tame. The nest is a depression in the ground with a few decayed leaves for lining. The eggs, four in number, are of rufous-drab colour, blotched with dark brown or black, the blotches confluent at the larger end[4].

GALLINAGO.

Gallinago, Leach, Syst. Cat. Mamm. &c. Brit. Mus. p. 30 (1816); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 616 (1896).

Like the Woodcocks (*Scolopax*), the Snipes have the eye situated very far back in

the head close to the ear-opening, and this character distinguishes *Gallinago* from the Sandpipers and other members of the subfamily Scolopacinæ. Only one species, *G. delicata*, occurs in Central America, and this is easily recognized by its mottled plumage and by the length of the inner secondaries, which are almost equal to the primaries.

The genus is cosmopolitan, the northern species being migratory, while the southern are mostly resident.

1. Gallinago delicata.

Scolopax delicata, Ord, ed. Wilson's Amer. Orn. vi. p. 18, t. 147. fig. 1 [1].

Gallinago delicata, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 178 [2]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 129 [3]; Herrera, La Nat. (2) i. pp. 186 [4], 328 [5]; Cherrie, Auk, 1890, p. 332 [6]; 1892, p. 329 [7]; Richm. Pr. U. S. Nat. Mus. xvi. p. 526 [8]; Jouy, t. c. p. 791 [9]; Allen, Bull. Amer. Mus. N. H. v. p. 33 [10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 85 [11]; Elliot, N. Amer. Shore-Birds, p. 50 [12]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 642 [13]; Oates, Cat. Eggs Brit. Mus. ii. p. 62, t. 3. fig. 1 [14].

Scolopax trachydactyla, Wagler, Isis, 1831, p. 521 [15].

Gallinago wilsoni, Bp. Comp. List Birds Eur. & N. Amer. p. 52 [16]; Scl. P. Z. S. 1856, p. 310 [17]; 1859, p. 369 [18]; 1864, p. 178 [19]; Moore, P. Z. S. 1859, p. 64 [20]; Scl. & Salv. Ibis, 1859, p. 228 [21]; P. Z. S. 1864, p. 372 [22]; 1867, p. 280 [23]; Lawr. Ann. Lyc. N. Y. vii. pp. 301 [24], 141 [25]; Mem. Bost. Soc. N. H. i. p. 308 [26]; Taylor, Ibis, 1860, p. 314 [27]; Salv. Ibis, 1866, p. 205 [28]; P. Z. S. 1870, p. 219 [29]; Cat. Strickl. Coll. p. 607 [30]; Dugès, La Nat. i. p. 142 [31]; Sumichr. La Nat. v. p. 233 [32]; Baird, Brew., & Ridgw. Water-Birds N. Amer. i. p. 188 [33]; Heine & Reichen. Nomencl. Mus. Hein. p. 331 [34].

Scolopax wilsonii, v. Frantzius, J. f. Orn. 1869, p. 377 [35].

Scolopax gallinago wilsoni, Seebohm, Geogr. Distr. Charadr. p. 486 [36].

Gallinago sp., Scl. & Salv. Ibis, 1859, p. 228 [37].

Typice scolopacina: supra nigra, rufo variegata, plumis plerisque rufo vel albido marginatis; corpore subtus albo, hypochondriis nigro transfasciatis; gutture imo et præpectore rufescentibus, nigro variegatis; rectricibus 16; axillaribus albis nigro transfasciatis: rostro virescenti-cinereo vel brunnescente; iride brunnea. Long. tota circa 11·0, alæ 5·3, caudæ 2·1, culm. 2·4, tarsi 1·25. (Descr. maris adulti ex Dueñas. Mus. Brit.)

Hab. North America, breeding from the Northern United States northward [11].—Mexico (*Wagler* [15], *Sumichrast* [32]), Sonora, Pachico, Chuhuichupa, San Diego (*Robinette* [10]), Mazatlan (*Grayson* [26]), Colima (*Xantus* [26]), Hacienda Angostura, San Luis Potosi (*Jouy* [9]), Guanajuato and Guadalajara (*Dugès* [31]), Valley of Mexico (*Herrera* [4 5]), city of Mexico (*White* [19]), Laguna del Rosario, Tlaxcala (*Ferrari-Perez* [2]), Playa Vicente, Vera Cruz (*Trujillo* [13]), Jalapa (*De Oca* [13 18]), Teapa (*Mrs. H. H. Smith* [13]); British Honduras, Cayo, western district (*Blancaneaux* [13]); Guatemala (*Constancia* [30]), city of Guatemala (*O. S.* [37]), Dueñas, Coban, Choctum, Tactic, San Gerónimo (*O. S. & F. D. G.* [13 37]), Atitlan (*Richardson* [13]); Honduras, Comayagua (*Taylor* [27]), Omoa (*Leyland* [20 21]); Nicaragua, San

Carlos and Rio Escondido (*Richmond* [8]); Costa Rica (*v. Frantzius* [25 33], *Endrés* [13]), Blewfields (*Wickham* [23]), San José (*Zeledon* [3], *Cherrie* [6 7]); Panama (*M'Leannan* [22 24]), Divala [13], Chitra [29] (*Arcé*).—South America to Brazil [13]; West Indies [13].

Wilson's Snipe represents the Common Snipe of Europe (*G. cœlestis*) in the New World, but is distinguished by having sixteen tail-feathers and regularly barred axillaries. It breeds in the United States from about 42° N. lat. to Alaska and in the Subarctic Regions of North America, migrating southward in autumn. From the dates given by various observers in Central America this bird seems to be somewhat irregular in its time of arrival; and this may be accounted for by the mildness or severity of the season, the cold weather driving the birds southward to their winter home. Jouy records *G. delicata* as "common in Central Mexico in suitable places along marshy banks of streams in winter," and at the Hacienda Angostura in San Luis Potosi he met with it on the 8th of December. Two birds were observed at noonday on a mossy bank, side by side, with their long bills tucked under their wings [9]. Grayson states that it arrives at Mazatlan in December, and is distributed in small numbers throughout the country, but not in sufficient quantity to make it worthy of the sportsman's attention. The bulk of individuals on migration pass further south, and he mentions that the species disappears in May, when it doubtless proceeds to its northern breeding-grounds [26]. Cavendish Taylor saw two or three of these birds near Comayagua in Honduras, and believed that they were common during the rainy season [27].

Salvin's note on the species in Guatemala is as follows:—"This seems to be the common Snipe of Guatemala, and, like the rest of its genus, frequents the swampy spots, and especially the pools formed during the rainy season. It is very abundant in the months of October and November about the plateau on which the city of Guatemala stands. At Dueñas it occurs in considerable numbers in February and March about the narrow belt of swampy land that surrounds the lake on nearly all sides. When put up, they seldom fly far, but alight again 50 or 100 yards off. They are by no means shy, but admit of one approaching to within easy shooting-distance before taking wing" [37].

Mr. Richmond observes that he first noticed Wilson's Snipe at San Carlos, in Nicaragua, on the 16th of October; it was common at the same place in February, and was exceedingly abundant at "Magnolia Plantation," on the Escondido River, in November and December [8]. In Costa Rica Mr. Cherrie observed this bird from October 1st to February 16th, when it was not uncommon near San José [6 7]. The species passes by the West-Indian Islands also to South America, where it winters as far south as Rio de Janeiro.

G. delicata is a typical Snipe in its habits, frequenting marshes and banks of rivers and feeding on worms, &c. The nest is a depression in the ground or is

sometimes in a tussock in a bog [12]. The eggs are four in number, and resemble those of *G. cœlestis* [14], being pyriform in shape, of a greyish-olive or olive-brown colour, with spots or blotches of reddish-brown, generally collected round the larger end [12 14].

Subfam. *PHALAROPODINÆ.*

The members of this subfamily may be described as small Plover-like birds, with a foot resembling that of a Grebe, the toes being lobed and the hinder aspect of the tarsus serrated (*cf.* Sharpe, Cat. Birds Brit. Mus. xxiv. p. 693).

Three genera are recognized, each with a single species. All are inhabitants of the Arctic and Subarctic Regions of either the Old or the New World, wandering far to the southward in winter. Two of the Phalaropes are met with within our limits, and it should be noted that Herrera mentions *P. wilsoni* and *P. tricolor* as occurring in the Valley of Mexico. These names are synonymous, but it is possible that one of them may have been intended to refer to *Crymophilus fulicarius*.

PHALAROPUS.

Phalaropus, Briss. Orn. vi. p. 12 (1760); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 698 (1896).

The single species of this genus is distinguished by a somewhat elongated tarsus, which exceeds the dimensions of the middle toe and claw, but is not equal to the culmen in length. The female is larger and more handsomely coloured than the male.

1. **Phalaropus hyperboreus.**

The Coot-footed Tringa, Edwards, Nat. Hist. Birds, i. p. 46, pl. 46 [1].

Tringa hyperborea, Linn. Syst. Nat. i. p. 249 [2].

Phalaropus hyperboreus, Tunst. Orn. Brit. p. 3 [3]; Scl. & Salv. Ibis, 1860, pp. 99 [4], 277 [5]; Salv. Cat. Strickl. Coll. p. 605 [6]; Seebohm, Geogr. Distr. Charadr. p. 340 [7]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 698 [8]; Oates, Cat. Eggs Brit. Mus. ii. p. 70 [9].

Lobipes hyperboreus, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 46 [10]; Sumichr. La Nat. v. p. 232 [11].

Lobipes lobatus, Baird, Brewer, & Ridgway, Water-Birds N. Amer. i. p. 330 [12].

Phalaropus lobatus, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 82 [13]; Elliot, N. Amer. Shore-Birds, p. 27 [14].

Ptil. hiem. Supra schistaceo-cinereus, plumis singulis albo fimbriatis; alis nigris, tectricibus majoribus et primariorum tectricibus late albo terminatis; secundariis ad basin albis, intimis dorso concoloribus; rectricibus nigricantibus, albo marginatis, extimis intus basin versus albis; pileo albo, nucha et collo postico dorso concoloribus; regione oculari et auriculari nigris; facie laterali et corpore subtus toto pure albis, corporis lateribus late sagittatim cinereo striatis; subalaribus et axillaribus albis: rostro nigro; pedibus plumbescentibus; iride saturate brnnnea. Long. tota circa 7·0, alæ 4·4, caudæ 1·9, culm. 0·95, tarsi 0·75. (Descr. feminæ adultæ ex San Francisco, California. Mus. nostr.)

♂ *ad.* feminæ similis, sed minor, et coloribus sordidioribus distinguendus.

Ptil. æstiv. Supra saturate schistaceus, interscapulii lateralibus plumis et scapularibus ochraceo dimidiatim notatis; gula et corpore subtus pure albis, lateribus cineraceis; gutture imo et præpectore cum colli

lateribus castaneis. Long. tota circa 7·0, alæ 4·5, caudæ 1·75, culm. 0·95, tarsi 0·76. (Descr. avis adultæ ex Hudson's Bay. Mus. Brit.)

Hab. North America, breeding in Arctic latitudes [13].—Mexico, Bahia de la Ventosa (*Sumichrast* [7 11]); Guatemala (*Constancia* [4 5 6]), Lake of Dueñas (*O. S.* [4 5 8]); Costa Rica, Desamparados (*Underwood, in litt.*).—N. Europe and N. Asia, migrating in winter to the Indian and Malayan seas [8].

The Red-necked or Northern Phalarope breeds in the Arctic and Subarctic Regions of both hemispheres, and occurs in Central America in winter. Four specimens came under our notice in Guatemala, these having been obtained on the Lake of Dueñas in August; they had nearly completed the change from the summer to the winter plumage, but retained some traces of the former, and had evidently but just arrived [4 5 10]. The species has also been met with in Tehuantepec in October by Sumichrast [7 8].

The account of the breeding of *P. hyperboreus* in its Arctic home, as given by Mr. Nelson, is very amusing, and it appears that all the courting is done by the larger and more brightly coloured hen, the male having to perform the duties of incubation. In addition to the lobed toes, in which character it approaches the Grebes, the species resembles the latter birds in being an excellent swimmer, and is even more at home on the water than on the land. It is tame and sociable, and even during the breeding-season many individuals consort together, while before migration considerable flocks may often be seen [14].

The nest is a slight structure of dry stalks in the centre of a tuft of grass. The eggs are four in number, pale or rich buff, or pale olive, blotched and spotted with blackish-brown and pale brown, with underlying greyish markings [14].

STEGANOPUS.

Steganopus, Vieill. N. Dict. d'Hist. Nat. xxxii. p. 136 (1819); Sharpe, Cat. Birds Brit. Mus. xxiv. p. 705 (1896).

This genus differs from the preceding in having the tarsus much longer, equal to the culmen in length.

Steganopus is represented by a single species, which, like the other Phalaropes, puts on a gay and exceedingly beautiful dress in summer, but assumes a plumage of grey and white for the winter. It is entirely American in its range, and does not extend so far north as the other members of the subfamily; in winter, however, it reaches south to Patagonia.

1. Steganopus tricolor.

Steganopus tricolor, Vieill. N. Dict. d'Hist. Nat. xxxii. p. 136 [1]; Elliot, N. Amer. Shore-Birds, p. 31 [2]; Sharpe, Cat. Birds Brit. Mus. xxiv. p. 705 [3].

Phalaropus tricolor, Stejn. Auk, ii. p. 183 [4]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 178 [5];

Herrera, La Nat. (2) i. pp. 186[6], 328[7]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 83[8].

Phalaropus wilsoni, Sabine, in Frankl. Narr. Journ. Polar Sea, i., App. p. 691[9]; Salv. Ibis, 1860, p. 101[10]; 1866, p. 198[11]; Scl. P. Z. S. 1864, p. 179[12]; Herrera, La Nat. (2) i. pp. 186[13], 327[14].

Steganopus wilsoni, Baird, Brewer, & Ridgway, Water-Birds N. Amer. i. p. 335[15].

Lobipes incanus, Jard. & Selby, Ill. Orn. i. t. 16[16].

Phalaropus stenodactylus, Wagler, Isis, 1831, p. 523[17].

Ptil. hiem. Supra cinereus, plumis singulis anguste albido fimbriatis; primariis pallide brunneis, rhachidibus albicanti-brunneis, secundariis dorso concoloribus et albo fimbriatis; uropygii lateribus et supracaudalibus pure albis, his nonnullis cinereo irregulariter fasciatis; rectricibus cinereis, lateralibus intus albis cinereo marmoratis; pileo colloque dorso concoloribus; fronte lata, supercilio lato, colli lateribus et corpore subtus toto pure albis; regione parotica et oculari cinereis, corporis lateribus vix cinereo lavatis; subalaribus pallide cineraceis, interioribus et axillaribus pure albis. Long. tota circa 9·0, alæ 5·3, caudæ 1·8, culm. 1·45, tarsi 1·25. (Descr. avis adultæ ex Mexico. Mus. nostr.)

Ptil. æstiv. Valde diversus, pulchre cinereus, pileo margaritaceo; loris et fascia lata ad latera colli ducta nigris; collo postico albo; colli lateribus, interscapulio laterali et scapularibus castaneis; gula summa genisque albis, gutture reliquo et præpectore et corporis lateribus pallide castaneo-rufo adumbratis: rostro nigro; pedibus cyanescenti-cinereis; iride brunnea. Long. tota circa 8·3, alæ 5·4, caudæ 2·25, culm. 1·4, tarsi 1·3. (Descr. feminæ adultæ ex Lake Nevada. Mus. nostr.)

Hab. North America, chiefly the interior, breeding from Northern Illinois and Utah northward to the Saskatchewan Region[8].—Mexico (*Jardine*[16], *Wagler*[17], *Taylor*[3], *Le Strange*[3]), Tres Marias Is. (*Forrer*[3]), Valley of Mexico (*White*[3 12], *Herrera*[13 14]), Xochimilco (*Herrera*[6 7]), Ixtapalapa, Tlalpam[3], Laguna de Chapulco, Puebla[5] (*Ferrari-Perez*), Jerez, Zacatecas (*Richardson*[3]); Guatemala, Lake of Dueñas (*Constancia*[3 10 11]).

Wilson's Phalarope is known almost entirely as an inland species; it is seldom found on the sea-coast, and migrates by way of the Mississippi Valley to Central Mexico and Guatemala. Even in its winter home in South America it appears to frequent inland waters rather than the coasts.

S. tricolor has been met with in several places in the Valley of Mexico, and a specimen obtained near the city of Guatemala by Constancia is in our collection.

In habits this species resembles the other Phalaropes, being tame and confiding in disposition; but it does not swim so much, and wades after the manner of a Sandpiper. When necessary, however, it swims with ease, and the young soon after being hatched are equally at home on the water.

The nest is a depression in the ground, lined with grass. The eggs, four in number, are incubated by the male; they vary from a fawn-colour to a rufous-drab, profusely spotted and speckled with different shades of brown, thickest at the larger end[2].

Order GAVIÆ.

This Order, which includes the Gulls and Terns (Laridæ) and the Skuas (Stercorariidæ), is in some respects allied to the Limicolæ, possessing many osteological characters in common with the latter group. There is also a great similarity in the colour and markings of the eggs of several species of Plovers and Terns, another indication of their close affinity; while the young are able to run soon after they are hatched, and are covered with down of a more or less variegated pattern.

That one of the smaller Skuas (*Stercorarius*) visits Central America during the winter months may be considered certain, as Herrera* and Villada† both record *S. parasiticus* as occurring on the lakes in the Valley of Mexico; but Mr. Howard Saunders thinks that the species may have been *S. pomatorhinus*.

The characters of the Gaviæ are given by Mr. Howard Saunders in the 'Catalogue of Birds,' and the following is a summary of them:—Palate schizognathous; nasals schizorhinal; basipterygoid processes absent; cervical vertebræ fifteen in number; coracohumeral groove distinct; furcula with hypocleidium; hypotarsus with two grooves; wing aquintocubital, with the fifth secondary wanting; ten large primaries visible, one minute and concealed; an aftershaft to the contour-feathers present; spinal feather-tract well defined on the neck by lateral bare tracts, and forked on the upper back; rectrices twelve in number; oil-gland tufted; the front toes always connected to each other by a web.

The eggs are usually three in number, though four have been found occasionally; they are double-spotted.

Fam. LARIDÆ.

The Laridæ are distinguished from the Stercorariidæ by the absence of a cere, the presence of the two notches on each side of the posterior margin of the sternum, and their more feeble claws. Of all the families of birds they are probably the most cosmopolitan, being found from the Arctic to the Antarctic Oceans, and frequently visiting inland waters. They are divided into three subfamilies, containing the Terns (Sterninæ), the Skimmers (Rhynchopinæ), and the Gulls (Larinæ).

Subfam. *STERNINÆ*.

Between the larger Terns and the smaller species of Gulls there is considerable resemblance. The members of this subfamily have a more sharply pointed bill than the true Gulls, with paragnathous mandibles, that is to say, with these about equal in

* La Nat. (2) i. pp. 188, 329.

† An. Mus. Mexico, i. pp. 279–280.

length. The pterylosis resembles that of the Snipes (Scolopacinæ), and the tail is more or less distinctly forked.

Eleven genera of Terns are recognized by Mr. Howard Saunders, and four of them are found in Central America.

HYDROCHELIDON.

Hydrochelidon, Boie, Isis, 1822, p. 563; Saunders, Cat. Birds Brit. Mus. xxv. p. 5 (1896).

This genus includes four species of small size, with a blackish under surface in summer, changing to white in winter, the young being also white below. The tail is not very deeply forked, and is short, being less than half the length of the wing; the rectrices are rounded or slightly pointed. The bill is small, with the culmen less than twice the length of the tarsus; the feet are feeble, and the webs between the toes considerably indented (*cf.* Saunders, *l. c.*).

Of the four species known, one is peculiar to the New World, and two of the Eastern forms, viz. *H. leucoptera* and *H. hybrida*, have occurred incidentally in American waters.

1. Hydrochelidon surinamensis.

Surinam Tern, Lath. Gen. Syn. iii. 2, p. 352 [1].

Sterna surinamensis, Gm. Syst. Nat. i. p. 604 [2].

Hydrochelidon nigra surinamensis, Baird, Brewer, & Ridgway, Water-Birds N. Amer. iii. p. 318 [3]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179 [4]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 133 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 26 [6].

Pelodes surinamensis, Heine & Reichenow, Nomencl. Mus. Hein. p. 356 [7].

Hydrochelidon surinamensis, Saunders, Cat. Birds Brit. Mus. xxv. p. 20 [8]; Oates, Cat. Eggs Brit. Mus. i. p. 176, t. 13. fig. 5 [9].

Sterna frenata, Scl. & Salv. Ibis, 1860, p. 278 [10].

Hydrochelidon plumbea, Lawr. Ann. Lyc. N. Y. vii. p. 479 [11]; Scl. P. Z. S. 1864, p. 179 [12]; Scl. & Salv. P. Z. S. 1864, p. 373 [13].

Hydrochelidon fissipes, Salv. Ibis, 1864, p. 385 [14]; 1866, p. 205 [15]; Coues, Ibis, 1864, p. 391 [16]; Scl. & Salv. P. Z. S. 1871, p. 573 [17]; Lawr. Mem. Bost. Soc. N. H. ii. p. 318 [18]; Bull. U. S. Nat. Mus. no. 4, p. 52 [19]; Sumichr. La Nat. v. p. 234 [20].

Sterna superciliaris, Lawr. Mem. Bost. Soc. N. H. ii. p. 318 [21]; Sumichr. La Nat. v. p. 234 [22].

Hydrochelidon lariformis, Streets, Bull. U. S. Nat. Mus. vii. p. 27 [23].

♀. *Ptil. æstiv.* Supra saturate schistacea, alis dorso concoloribus, remigibus nigricantibus, primariis extus et ad apicem cineraceis, rhachidibus albis, secundariis intimis omnino cineraceis; margine alari albo; cauda cineracea; pileo toto nigro, collo postico nigro adumbrato; facie laterali et corpore subtus toto fumoso-nigris; tibiis, crisso et subcaudalibus albis; subalaribus albidis, majoribus, axillaribus et remigibus intus pallide cineraceis: rostro nigro; pedibus saturate brunneis; iride saturate brunnea. Long. tota circa 9·0, alæ 7·9, caudæ 2·8, culm. 1·25, tarsi 0·55. (Descr. feminæ adultæ ex Cay Dolores Channel. Mus. nostr.)

♂. *Ptil. hiem.* Supra cinerea; torque collari albo; pileo cineraceo, plumis medialiter nigris et cano adumbratis; fronte, loris, regione oculari, facie laterali et corpore subtus toto albis, regione anteoculari et

plumis auricularibus nigris; præpectore laterali plumbeo, plagam conspicuam formante; subalaribus pallide cineraceis; axillaribus et remigibus intus plumbescentibus. Long. tota circa 9·5, alæ 7·9. (Descr. maris adulti ex Cay Dolores Channel. Mus. nostr.)

Hab. North America, from Alaska and the Fur Countries; breeding from the Middle United States, west of the Alleghanies, northward [6] to Hudson's Bay [3].—Mexico [7], Sinaloa (*Streets* [23]), Matamoros (*Dresser* [8]), Laguna Verde, Vera Cruz (*Trujillo* [8]), Putla (*Boucard* [8]), Laguna de San Baltazar, Laguna de Chapulco, State of Puebla (*Ferrari-Perez* [4]), near the city of Mexico (*White* [12]), Mazatlan (*Grayson* [3 8 18]), Manzanillo (*Xantus* [21]), Acapulco (*Mrs. H. H. Smith* [8]), Gulf of Tehuantepec, San Mateo (*Sumichrast* [19 20]); British Honduras, Southern Water Cay [14 16], Curlew Cay, Cay Dolores Channel [8] (*O. S. & F. D. G.*); Guatemala, Coban (*O. S.* [8 10]); Honduras [8]; Costa Rica, Punta Arenas (*Zeledon* [5]); Panama (*M'Leannan* [11 13]).—Guiana [8]; Peru [8]; Chile [8].

The present species is the representative in America of the Black Tern (*H. nigra*) of Europe, which it very closely resembles in its winter plumage, but is distinguished in summer by the sooty-black under surface and by the more conspicuous line of white along the carpal edge of the wing.

H. surinamensis is a bird of somewhat irregular distribution in North America, breeding in the north in the marshes of the Fur Countries, and in similar localities throughout the interior of the United States. It is common in flocks in many places in Central America, appearing at Mazatlan, according to Grayson, in September and October, and remaining all the winter [18]. It has been more frequently observed on the Pacific coast than on the Atlantic side or in the interior, and extends its range in winter to Peru and Chile [8].

The American Black Tern is a marsh-loving bird in the breeding-season, and feeds more on insects than on fish, showing great activity in pursuit of the former.

The nest is generally made of reeds placed on tussocks, and is often of large size. The eggs resemble those of *H. nigra*, being of a pale buff colour or brownish-buff, heavily blotched or spotted with reddish-brown or blackish-brown.

GELOCHELIDON.

Gelochelidon, Brehm, Vög. Deutschl. p. 774 (1831); Saunders, Cat. Birds Brit. Mus. xxv. p. 25 (1896).

This genus belongs to the section of Terns in which the outer tail-feathers are pointed and longest. The tarsus is unusually lengthened, exceeding the dimensions of the middle toe and claw, while the tail is less than half the length of the wing. The bill is conspicuously stout and obtuse, whence the trivial English name of the "Gull-billed" Tern is applied to the only species of the genus *Gelochelidon*.

The single representative is found over the greater part of the temperate regions of

the Old World, as well as America, where, however, it is not often noticed on the Pacific coast.

As Mr. Howard Saunders points out, the characters of the genus are somewhat intermediate between those of the Gulls and Terns, and this remark also applies to the eggs.

1. Gelochelidon anglica.

Sterna anglica, Mont. Orn. Dict. Suppl. cum fig. [1]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 277 [2].

Gelochelidon anglica, Coues, Ibis, 1864, p. 389 [3]; Salv. Ibis, 1865, p. 190 [4]; 1866, p. 199 [5]; Scl. & Salv. P. Z. S. 1871, p. 572 [6]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 51 [7]; Sumichr. La Nat. v. p. 234 [8]; Saunders, Cat. Birds Brit. Mus. xxv. p. 25 [9]; Oates, Cat. Eggs Brit. Mus. i. p. 177 [10].

Sterna aranea, Dresser, Ibis, 1866, p. 44 [11].

Gelochelidon nilotica, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 22 [12].

Ptil. æstiv. Supra pulchre margaritacea, secundariis intimis et rectricibus albicantioribus; primariis intus cineraceis, rhachidibus albis; pileo toto nigerrimo; loris et facie laterali et corpore subtus toto albis; subalaribus et axillaribus albis, majoribus et remigibus intus margaritaceo-albis: rostro nigro; pedibus brunnescenti-nigris; iride saturate brunnea. Long. tota circa 13·0, alæ 11·8, caudæ 4·7, culm. 1·7, tarsi 1·15. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

Ptil. hiem. Supra margaritacea, pileo vix albicantiore; macula anteoculari parva nigra; regione parotica summa schistacea; corpore subtus toto pure albo. Long. tota circa 12·0, alæ 10·7. (Descr. avis adultæ ex Chiapam. Mus. nostr.)

Hab. North America, chiefly on the Atlantic and Gulf coasts of the United States, breeding north to New Jersey, and wandering casually to Long Island and Massachusetts [12].—Mexico, Matamoros (*Dresser* [2 11]), coast of Gulf of Tehuantepec [8], San Mateo [7] (*Sumichrast*); Guatemala, Pacific coast, Chiapam Lagoon (*O. S.* [2 3 4 5 9]).—Atlantic coast of South America to Argentina [9].—Temperate and warm regions of the Old World to Australia (breeding), extending in Africa as far as Fashoda.

This is a bird of very wide distribution, frequenting the sandy shores of the sea-coasts and inland lakes, and breeding throughout the greater part of its habitat.

The Gull-billed Tern has been recorded by Wilson and Audubon as breeding in the salt-marshes of Cape May and at the mouth of the Mississippi, and it is also known to breed as far north as southern New Jersey; but it has not been found nesting in any part of Central America, though eggs have been taken by Gundlach in Cuba [2]. Mr. Dresser met with the species breeding on Galveston Island in June [11].

In Mexico it was noticed by Sumichrast in the Gulf of Tehuantepec [7 8], and Salvin found it frequenting the lagoon of Chiapam, on the Pacific coast of Guatemala, where, however, it did not congregate in any numbers, two or three only being observed in company [4].

The nest is a mere depression scratched in the sand, with sometimes a few straws

as a lining. The eggs are generally three, rarely four, in number; they are of a broad oval shape, the ground-colour varying from a greyish- or buffish-white to a pale buff, stone-colour, or brown; the markings are of small size and evenly distributed over the shell, consisting of spots and blotches of dark brown or olive-brown, with very prominent underlying grey [10].

HYDROPROGNE.

Hydroprogne, Kaup, Natürl. Syst. p. 91 (1829); Saunders, Cat. Birds Brit. Mus. xxv. p. 32 (1896).

The single species of the genus *Hydroprogne* is a bird of large dimensions, with a red bill of exceptional size, stoutness, and depth. Tail very short, being less than one-third of the wing; the outer tail-feathers are the longest and are pointed. Tarsus short, being less than the length of the middle toe and claw. *H. caspia* is found in nearly all temperate and tropical regions.

1. Hydroprogne caspia.

Sterna caspia, Pall. N. Comm. Petrop. xiv. 1, p. 582, t. 22. fig. 2 [1]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 280 [2].

Hydroprogne caspia, Saunders, Cat. Birds Brit. Mus. xxv. p. 32 [3]; Oates, Cat. Eggs Brit. Mus. i. p. 178 [4].

Sterna tschegrava, A. O. U. Check-l. N. Amer. Birds, p. 23 [5].

Ptil. æstiv. Maxima: supra delicate margaritaceo-cinerea; rectricibus dorso concoloribus, intus et ad apicem albis; alis dorso concoloribus, secundariis intus albidioribus, primariis saturatioribus, intus vix nigricantibus, juxta rhachidem albam et pogonio externo schistaceis; pileo nuchaque cum loris dimidiatis et plumis subocularibus virescenti-nigerrimis; macula suboculari alba; loris inferioribus, facie laterali et corpore subtus toto pure albis: rostro miniato, interdum apicem versus corneo; pedibus nigris; iride saturate brunnea. Long. tota circa 20·0, alæ 17·2, caudæ 4·2, rectrice extima 5·7, culm. 2·9, tarsi 1·6. (Descr. maris adulti ex Corpus Christi. Mus. nostr.)

Ptil. hiem. Ptilosi æstivæ similis, sed pileo nigro, albo maculato et linealiter striato. Long. tota circa 21·0, alæ 16·0. (Descr. maris adulti ex Presidio. Mus. nostr.)

Hab. North America, from a little beyond the Arctic Circle, breeding southward to Virginia, Lake Michigan, Texas, Nevada, and California [3 5].—Mexico, Mazatlan, Presidio (*Forrer* [3]).—Europe from about 60° N. lat. southwards; Asia to China [3]; Malayasia to Australia and New Zealand [3]; Africa [3].

In Central America this bird can be scarcely more than a winter visitor, two specimens only having been procured near Mazatlan by Mr. Forrer, one in December and another in February [3].

It is chiefly an inhabitant of the sea-shores and adjacent islands, but is also found on inland seas and lakes. Its eggs, laid in a depression of the sand, are similar to those of the Gull-billed Tern, but larger [4].

STERNA.

Sterna, Linn. Syst. Nat. i. p. 227 (1766) ; Saunders, Cat. Birds Brit. Mus. xxv. p. 40 (1896).

In the genus *Sterna*, which contains the true Terns, the tail is at least half the length of the wing, and shows generally more than this proportion ; the outer tail-feathers, which are the longest, are pointed. The tarsus is short, never exceeding the middle toe and claw in length. The bill is compressed and slender.

The genus is cosmopolitan in its range, and includes more than thirty species. Mr. Howard Saunders unites, under the generic name *Sterna*, all the Little Terns (*Sternula*) and the Sooty Terns (*Onychoprion*). The eggs vary in number from one to three, and some of them are very similar to those of Limicolæ.

1. Sterna forsteri.

Sterna forsteri, Nutt. Man. Orn. ii. p. 274, footnote [1] ; Coues, Ibis, 1864, p. 390 [2] ; Salv. Ibis, 1866, p. 199 [3] ; Scl. & Salv. P. Z. S. 1871, p. 569 [4] ; Lawr. Mem. Bost. Soc. N. H. ii. p. 318 [5] ; Bull. U. S. Nat. Mus. no. 4, p. 51 [6] ; Sumichr. La Nat. v. p. 234 [7] ; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 292 [8] ; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 24 [9] ; Saunders, Cat. Birds Brit. Mus. xxv. p. 46 [10] ; Oates, Cat. Eggs Brit. Mus. i. p. 180, t. 13. fig. 4 [11].

Ptil. hiem. Supra margaritacea, pileo toto et collo postico albis ; uropygio quoque albo; cauda margaritacea, rectricibus extimis albis, intus sordide cineraceis ; alis dorso concoloribus, secundariis albo terminatis ; primariis apicem versus nigris, intus albis, rhachidibus albis ; loris, facie laterali et corpore subtus toto albis ; regione anteoculari et fascia lata postoculari nigris ; supercilio postico nigro maculato : rostro nigro, apice albicante ; pedibus saturate aurantiacis ; iride brunnea. Long. tota circa 13·0, alæ 9·4, caudæ 5·3, rectrice extima 5·5, culm. 1·6, tarsi 0·9. (Descr. maris adulti ex Corpus Christi, Texas. Mus. nostr.)

Ptil. æstiv. Supra margaritacea ; pileo et nucha, haud cristata, et facie laterali dimidiata nigris, macula suboculari nigra ; loris et facie laterali cum regione parotica et corpore subtus toto pure albis : rostro aurantiaco, apicem versus nigro, apice ipso flavo ; pedibus aurantiaco-rubris. Long. tota circa 13·0, alæ 9·4, rectrice extima 6·8. (Descr. feminæ adultæ ex Corpus Christi, Texas. Mus. nostr.)

Juv. adultis similis, sed brunneo adumbrata, plumis singulis apicem versus pallide brunnescentibus.

Hab. North America generally, breeding from Manitoba southward to Virginia, Illinois, Texas, and California [9].—Western Mexico [10], Mazatlan (*Grayson* [5 8]), San Mateo, Ventosa Bay, Tehuantepec (*Sumichrast* [6 7 10]) ; Guatemala, Lake of Dueñas (*O. S.* [2 3 4 10]).—South America, off the coast of Pernambuco [10].

S. forsteri is distinguished from the other Terns of medium size, which have the forehead black like the crown, by the colour of the long outer tail-feathers, in which the outer web is white and the inner one is "darkish grey," as Mr. Howard Saunders expresses it.

This species is found in the interior, as well as on the coasts, of North America, frequenting grassy marshes [8]. In winter it visits Mexico and Guatemala, and was found abundantly by Grayson along the shores and esteros of Mazatlan, from October to April [5].

In general habits *S. forsteri* resembles the Common Tern, *S. fluviatilis*, with which it consorts during the breeding-season. Its food consists mostly of small fish.

The nest is built amongst reeds and tussocks, and is often a bulky structure. The eggs are two or three in number, of a pale greyish-green or pale buff, thickly and evenly marked with spots and blotches of dark blackish-brown and underlying pale purple [11].

2. Sterna fluviatilis.

Sterna fluviatilis, Naum. Isis, 1819, pp. 1847, 1848 [1]; Saunders, Cat. Birds Brit. Mus. xxv. p. 54 [2]; Oates, Cat. Eggs Brit. Mus. i. p. 182 [3].

Sterna sp., Coues, Ibis, 1864, p. 389 [4].

Sterna hirundo (nec Linn.), Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 295 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 24 [6].

Ptil. æstiv. Supra margaritaceo-cinerea; collo postico et laterali, uropygio imo et supracaudalibus pure albis; rectricibus quoque albis, vix cinereo extus lavatis, duabus extimis magis distincte extus cinereis; alis dorso concoloribus, remigibus albis, secundariis albo terminatis; primariis albis, extus et intus juxta rhachidem albam cineraceis, et apicem versus intus quoque nigricantibus vel cinerascenti-nigris, pogonio interno minime ad apicem albo marginato; pileo nuchaque haud cristata nigerrimis; loris et facie laterali cum corpore subtus toto, subalaribus et axillaribus et margine alari albis pectore vix margaritaceo-cinereo adumbrato: rostro corallino, ad apicem corneo-brunneo; pedibus corallinis; iride saturate brunnea. Long. tota circa 14·0, alæ 10·4, caudæ 2·5, rectrice extima 5·2, culm. 1·4, tarsi 0·8. (Descr. maris adulti ex Tarpon Springs, Florida. Mus. nostr.)

♀ mari similis. Long. tota circa 12·5, alæ 10·7. (Descr. feminæ adultæ hiem. ex Tarpon Springs. Mus. nostr.)

Ptil. hiem. similis ptilosi æstivæ, sed fronte et pileo albo striolatis.

Av. hornot. similis ptilosi hiemali adultæ; fronte et loris albis; pileo reliquo albo, nigro striato; nucha cum pilei postici lateribus et regione anteoculari nigris; tectricibus alarum minimis nigricantibus. (Descr. av. hornot. ex San José de Guatemala. Mus. nostr.)

Juv. similis præcedenti, sed plumis fascia cinerascenti-brunnea subterminali ornatis vel marmoratis.

Hab. North America, chiefly east of the Plains, breeding from the Arctic coast, somewhat irregularly, to Florida, Texas, and Arizona, and scarcely known on the Pacific side [2 6].—Guatemala, San José (*O. S.* [2 4]).—South America, eastern coast to Bahia [2]; West Indies [2].—Europe and Temperate Asia, breeding; India, Ceylon, and South Africa in winter [2].

This is the well-known "Common Tern" of Europe, and has an extensive distribution both in the Old and New Worlds. It differs from *S. forsteri* in having the long outer rectrices white, with a darker grey outer web than on the rest of the tail-feathers. The inner webs of the primaries are not white to their extreme ends, and the bill and feet are both red.

A single example of this Tern was obtained by Salvin at San José in Guatemala on the 8th of December, 1862. Its identification puzzled Dr. Elliott Coues, when the specimen was submitted to him in 1864, but Mr. Howard Saunders has since determined that it is a young individual of *S. fluviatilis* [2].

The species breeds both on the sea-shore and inland in North America, migrating

southwards in winter, at which season it may be looked for in Central America. The nest is usually a depression in the sand, but is sometimes a rough structure of water-plants.

The eggs are two or three in number, varying much in form and colour, from pale greenish-white or bluish-white to different shades of buff, with spots and blotches of blackish-brown with underlying markings of grey or pale purple [3].

3. Sterna dougalli.

Sterna dougalli, Montagu, Orn. Dict. Suppl. cum fig. [1]; Scl. & Salv. P. Z. S. 1871, p. 571 [2]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 51 [3]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 303 [4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 25 [5]; Saunders, Cat. Birds Brit. Mus. xxv. p. 70 [6]; Oates, Cat. Eggs Brit. Mus. i. p. 186 [7].

Sterna paradisea (nec Brünn.), Salv. Ibis, 1864, p. 387 [8]; 1886, p. 199 [9]; Coues, Ibis, 1864, p. 389 [10].

Ptil. æstiv. præcedentibus similis, sed rostro gracili nigro, pileo nigro cum plumis nuchalibus elongatis cristam formantibus, et primariis intus ad apicem ipsam albo marginatis; corpore subtus albo roseo induto distinguenda: rostro nigro, basin versus aurantiaco-rubro; pedibus aurantiaco-rubris; iride brunnea. Long. tota circa 15·5, alæ 8·9, caudæ 2·5, rectrice extima 7·4, culm. 1·55, tarsi 0·75. (Descr. maris adulti ex Grassy Cay. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed fronte alba maculata et pectore albo haud roseo induto distinguenda.

Hab. North America, Massachusetts, casually to Maine and Nova Scotia [5].—Mexico, Ventosa Bay, Tehuantepec (*Sumichrast* [3]); British Honduras, Belize, Grassy Cay (*O. S.* [6 8 9 10]).—South America, Venezuela [6]; West Indies [6].—Seas of Temperate Europe and Eastern Asia [6]; Indian Ocean to Australia [6]; Africa [6].

The beautiful Roseate Tern is distinguished by the pale grey, almost silvery-white, colour of the upper surface, and especially by the white edging to the inner web of the primaries, which is continued round the end of the quill. The bill is black, with the base red or orange, decreasing in extent during the breeding-season. In old birds the white breast is suffused with a rosy blush, which gradually vanishes after death.

S. dougalli, like *S. fluviatilis*, has a wide distribution in the Old World, and is found breeding in many localities along the Atlantic coast of North America. It probably nests in Central America also, as Salvin found it on Grassy Cay off the coast of British Honduras, apparently preparing to breed [8].

As Mr. Howard Saunders remarks [6], this is essentially a Sea-Tern, usually nesting on low islands, though sometimes on sandy coasts. Audubon found the eggs in Florida, where the species occurred in small flocks; the former were deposited on the bare rocks or among the roots of grasses. The eggs are three in number, more elongated, as a rule, than those of the Common Tern, but passing through the same variations of colour [7].

4. Sterna cantiaca.

Sandwich Tern, Lath. Gen. Syn. iii. 2, p. 356 [1].

Sterna cantiaca, Gm. Syst. Nat. i. p. 606 [2]; Scl. & Salv. P. Z. S. 1871, p. 569 [3]; Saunders, Cat. Birds Brit. Mus. xxv. p. 75 [4]; Oates, Cat. Eggs Brit. Mus. i. p. 186 [5].

Thalasseus cantiacus, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 51 [6].

Thalasseus cantianus, Sumichr. La Nat. v. p. 234 [7].

Sterna cantiana, Salv. Ibis, 1889, p. 379 [8].

Thalasseus acuflavidus, Salv. Ibis, 1864, pp. 381 [9], 386 [10]; 1865, p. 190 [11]; 1866, p. 198 [12]; Coues, Ibis, 1864, p. 389 [13].

Sterna acuflavida, Lawr. Ann. Lyc. N. Y. ix. p. 210 [14].

Sterna sandvicensis acuflavida, Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 288 [15]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 24 [16].

Ptil. æstiv. Supra pulchre margaritacea; uropygio, supracaudalibus et rectricibus pure albis; alis dorso concoloribus, secundariis intus et apicem versus albis; primariis cinereis, juxta rhachidem albam nigricantibus vel schistaceo-nigris, intus ad apicem albo marginatis; pileo toto nuchaque nigerrimis, nuchæ cristatæ plumis acuminatis; collo postico et interscapulio summo vix albicantibus; loris et facie laterali dimidiatis et corpore subtus toto pure albis, pectore vix roseo induto: rostro nigro, albo vel flavido terminato; pedibus nigris; iride saturate brunnea. Long. tota circa 16·0, alæ 11·7, caudæ 2·7, rectrice extima 5·2, culm. 2·1, tarsi 0·95. (Descr. maris adulti æstiv. ex Lighthouse Reef. Mus. nostr.)

♀. *Ptil. hiem.* ptilosi æstivæ similis, sed subtus pure alba, minime roseo adumbrata, pileo albo, postice nigro striolato, regione oculari, pilei postici lateribus et nucha cristata nigris. Long. tota circa 15·0, alæ 10·8. (Descr. feminæ adultæ ex Chiapam. Mus. nostr.)

Hab. North America, South Atlantic and Gulf coasts, north casually to Southern New England [4 16].—Mexico, Gulf of Tehuantepec, San Mateo (*Sumichrast* [6 7]), Laguna Verde and La Antigua, Vera Cruz (*Trujillo* [4]), Celestin, N. Yucatan (*Schott* [14]), Cozumel I. (*Gaumer* [4 8]); British Honduras, Lighthouse Reef [3 4], Saddle Cay [9], Northern Two Cays [5] (*O. S.* [9 10]); Guatemala, both coasts [12], Chiapam (*O. S.* [4 11 13]).—Seas of Temperate Europe to the Caspian, coasts of Africa in winter, Red Sea east to Persian Gulf and coasts of Sind [4].

The Sandwich Tern is an inhabitant of Temperate Europe and Western Asia, and is found also in Florida and the Gulf States of North America. By some authorities the American bird is separated as a distinct race, *S. acuflavida*, but Mr. Howard Saunders [4] considers the European and American birds to be inseparable.

S. cantiaca is distinguishable from *S. dougalli* by its larger size as well as by its black feet and bill; the feathers of the nape are also prolonged and pointed.

This Tern breeds in Florida, and occurs on both coasts of Mexico and Guatemala in winter [16]. Salvin met with the species on the islands off the coast of British Honduras [9 10], but did not find it breeding.

It is distinctly a sea-bird, rarely nesting at any considerable distance from water [4]. The eggs are two or three in number, laid in a depression in the sand, and are beautifully marked and varied. Mr. Oates states that the ground-colour ranges from

white, through cream-colour and pale buff, to brownish-buff. The markings are, as a rule, very bold, and consist of spots and blotches of dark brown approaching black, and underlying inky-purple. Some eggs are delicately marked with only small spots; others are marked with huge confluent blotches, measuring quite an inch across, and between these two types every combination occurs [5].

5. Sterna maxima.

Hirondelle de mer de Cayenne, Daubent. Pl. Enl. ix. t. 988 [1].

Sterna maxima, Bodd. Tabl. Pl. Enl. p. 58 [2]; Scl. & Salv. P. Z. S. 1871, p. 567 [3]; Lawr. Mem. Bost. Soc. N. H. ii. p. 318 [4]; Boucard, P. Z. S. 1883, p. 462 [5]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 284 [6]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179 [7]; Salvin, Ibis, 1889, p. 379 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 23 [9]; Saunders, Cat. Birds Brit. Mus. xxv. p. 80 [10]; Nelson, N. Amer. Fauna, no. 14, p. 24 [11]; Oates, Cat. Eggs Brit. Mus. i. p. 187, t. 14. fig. 7 [12].

Thalasseus maximus, Lawr. Bull. U. S. Nat. Mus. no. 4, p. 51 [13]; Sumichr. La Nat. v. p. 234 [14].

Sterna galericulata, Licht. Preis-Verz. Mex. Vög. p. 3 [15]; Cab. J. f. Orn. 1863, p. 59 [16]; Finsch, Abhandl. nat. Ver. Bremen, 1879, p. 359 [17]; Saunders, Cat. Birds Brit. Mus. xxv. p. 81, note [18].

Sterna regia, Gambel, Journ. Acad. Phil. (2) i. p. 228 [19]; Lawr. Ann. Lyc. N. Y. ix. p. 210 [20]; Zeledon, Cat. Aves Costa Rica, 1882, p. 36 [21].

Thalasseus regius, Coues, Ibis, 1864, p. 388 [22]; Salv. Ibis, 1864, p. 385 [23]; 1865, p. 190 [24]; 1866, p. 199 [25].

Ptil. æstiv. Major; pileo et loris dimidiatim nigris; nuchæ valde cristatæ plumis acuminatis; corpore supra margaritaceo-cinereo; alis caudaque dorso concoloribus, margine carpali albo; collo postico et laterali cum loris dimidiatis, facie laterali et corpore subtus toto pure albis; rectricibus intus albidioribus, longioribus extus albis; primariis intus albis, extus cum area interna juxta rhachidem albam et apicem versus pogonii interni schistaceis vel schistaceo-nigris: rostro aurantiaco-rubro; pedibus nigris; iride saturate brunnea. Long. tota circa 19·5, alæ 15·2, caudæ 3·9, rectrice extima 7·2, culm. 2·55, tarsi 1·3. (Descr. maris adulti ex Chiapam. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed fronte et pileo antico albis, hoc nigro maculato; regione oculari et pileo postico cum nucha cristata nigris. Long. tota circa 18·0, alæ 13·8. (Descr. av. hiem. ex Middle Cay. Mus. nostr.)

Hab. North America, casually northward to Massachusetts and the Great Lakes, California, breeding from Virginia southward [9 10].—Mexico (*Deppe & Schiede* [15 16]), Mazatlan (*Bischoff* [4], *Forrer* [10]), Manzanillo, Colima (*Lloyd* [10]), Guaymas (*Palmer* [4]), Isabella I. (*Grayson* [4 17]), Tres Marias Is. (*Nelson* [11]), Gulf of Tehuantepec, San Mateo (*Sumichrast* [13 14]), Jalapa, Rio Rancho Nuevo, Vera Cruz (*Ferrari-Perez* [7 10]), coast of Yucatan, Rio Lagartos [5 10], Cozumel I. [8 10] (*Gaumer*), Merida (*Schott* [20]); British Honduras, Cays along the coast [6], Belize [22], Glover's Reef [23] (*O. S.*); Guatemala, both coasts [3 24], Chiapam [22 23] (*O. S.*); Honduras (*Dyson* [10]); Costa Rica (*Zeledon* [21]).—South America, both coasts, south to Santa Catherina and Peru [10]; West Indies [10].—West Africa [10].

The Royal Tern is a denizen of Eastern North America, breeding from Virginia to

the West Indies. It occurs in winter on both coasts of Mexico and Guatemala, and Nelson believes that the species may breed in very limited numbers on the Tres Marias Islands [11]. We found it abundant in Guatemala, and Salvin procured specimens at Belize and on Glover's Reef off the coast of British Honduras [23].

S. maxima is often to be seen fishing in flocks, and breeds in colonies, the nest being a mere depression in the sand. The eggs are one or two in number, of a broad, pointed, oval form, the ground-colour varying from cream to pale buff. The surface-markings consist of spots and small blotches of deep chocolate- or blackish-brown, and these are almost invariably blurred or smudged at the margin. The underlying markings are of a pale purple colour, and are also blurred and ill-defined. The markings of both kinds are equally, and not very thickly, distributed over the whole shell [12].

6. Sterna elegans.

Sterna elegans, Gambel, Pr. Acad. Phil. 1848, p. 129 [1]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 287 [2]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 23 [3]; Saunders, Cat. Birds Brit. Mus. xxv. p. 84 [4]; Nelson, N. Amer. Fauna, no. 14, p. 24 [5].

Thalasseus elegans, Coues, Ibis, 1864, p. 389 [6]; Salv. Ibis, 1866, p. 198 [7].

Sterna galericulata (nec Licht.), Scl. & Salv. P. Z. S. 1871, p. 568 [8]; Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [9].

Ptil. æstiv. præcedenti similis, sed minor, rostro longiore et graciliore; notæo paullo saturatiore, cauda albidiore: rostro læte aurantiaco-rubro; pedibus nigris. Long. tota circa 16·0, alæ 12·2, caudæ 3·4, rectrice extima 5·8, culm. 2·65, tarsi 1·15. (Descr. maris adulti ex San Mateo. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed fronte alba distinguenda. Long. tota 15·5, alæ 11·25. (Descr. maris hiem. ex Corpus Christi. Mus. nostr.)

Juv. ptilosi hiemali similis, sed rostro nigricante.

Hab. North America, Pacific coast of Southern California, once on Atlantic coast at Corpus Christi, Texas [4].—Mexico, Guaymas, west of Sonora (*Stone* [2]), Mazatlan (*Gambel* [1 2]), Isabella I. (*Grayson* [9]), Gulf of Tehuantepec, San Mateo (*Sumichrast* [8]); Salvador, La Union (*Dow* [4 6]); Honduras, Bay of Fonseca (*Dow* [7]). — South America, western coast to Chile [4].

This species is smaller than *S. maxima*, but has a longer and more slender bill; the wing does not exceed thirteen inches in length. The black colour of the lores, according to Mr. Howard Saunders [4], runs completely into the posterior portion of the nostrils, and the mantle is a shade darker than in *S. maxima*, and the tail is rather more conspicuously white, otherwise the plumages of the two species are similar.

S. elegans is an occasional visitant to the coast of California, and a specimen from Corpus Christi, Texas, obtained by Mr. F. B. Armstrong in July, is in our collection. It has been found nesting in Sonora, and occurs in winter along the western coast of Central America. Grayson noticed it on Isabella Island, off the coast of San Blas, and states that it was common at Mazatlan through the winter months, until the

latter part of March, when it congregated on the beach in large numbers, and in a short time disappeared for its breeding-grounds [9]. Mr. Nelson did not find the species on the Tres Marias Islands [5]. In winter it extends its range along the western coast of South America to Peru and Chile [4].

An egg taken by Captain Stone at Guaymas was white with a pinkish tinge; the markings were quite bold and distinct, and were of a deep black and burnt-sienna colour, with subdued shell-markings of lavender-grey [2].

7. Sterna anæstheta.

L'Hirondelle de Mer de l'Isle de Panay, Sonn. Voy. Nouv. Guin. p. 125, pl. 84 [1].

Sterna anæstheta, Scop. Del. Faun. et Flor. Insubr. ii. p. 92 [2]; Baird, Brewer, & Ridgway, Hist. N. Amer. Birds, ii. p. 316 [3]; Zeledon, Cat. Aves Costa Rica, 1887, p. 133 [4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 26 [5]; Saunders, Cat. Birds Brit. Mus. xxv. p. 101 [6]; Oates, Cat. Eggs Brit. Mus. i. p. 190 [7].

Haliplana panaya (Lath.), Salv. Ibis, 1864, p. 381 [8]; Coues, Ibis, 1864, p. 391 [9].

Haliplana panayensis (Gm.), Salv. Ibis, 1866, p. 199 [10].

Onychoprion panayensis, Scl. & Salv. P. Z. S. 1871, p. 572 [11]; Zeledon, Cat. Aves Costa Rica, 1882, p. 36 [12].

Haliplana discolor, Coues, Ibis, 1864, p. 392, note [13].

Ptil. æstiv. Supra fuliginoso-brunnea, schistaceo lavata; interscapulio canescentiore; pileo nuchaque nigerrimis; fronte angusta et supercilio brevi pure albis; loris et fascia lata oculari nigris, pileum nigrum lateralem conjungentibus; collo postico celato, faciei et colli lateribus et corpore subtus toto pure albis; alis dorso concoloribus; tectricibus primariorum et primariis nigricantibus, vix cinereo lavatis, et intus cuneatim albis; uropygio et cauda clarius schistaceis, rectricibus intus et basin versus albis, externis plerumque albis apicem versus cinerascentibus, rectrice extima alba, vix subterminaliter cinerascente: rostro et pedibus nigris; iride saturate brunnea. Long. tota circa 15·0, alæ 10·1, caudæ 2·8, rectrice extima 6·5, culm. 1·55, tarsi 0·85. (Descr. maris adulti ex Lighthouse Reef. Mus. nostr.)

♀ mari similis. Long. tota circa 14·8, alæ 10·45. (Descr. feminæ adultæ ex Southern Water Cay. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed pileo albo maculato distinguenda.

Juv. adultis hiemalibus similis, sed pileo toto nuchaque nigro striatis, notæi plumis albido marginatis; tectricibus alarum minimis nigricantibus; primariis et rectricibus saturatioribus, intus magis restricte albidioribus: subtus pure alba. (Descr. av. juv. ex Florida. Mus. nostr.)

Hab. North America, casual in Florida [5].—British Honduras, Cays of Belize coast [10], Lighthouse Reef [9], Saddle Cay [7 8], Curlew Cay [7], Southern Water Cay [6] (*O. S.*); Costa Rica (*Zeledon* [4 12]).—West Indies [6].—Coasts and Islands of South Atlantic [6], Indian, and Pacific Oceans [6].

Owing to their style of coloration, the Sooty Terns have been often considered to be generically distinct from the typical species of the genus *Sterna*, but Mr. Howard Saunders (*t. c.* p. 110) has been unable to find any structural characters to warrant their separation.

The present species is easily recognized by its dark smoky-brown upper plumage and white breast, this latter character being present in the young birds also. It occurs occasionally in Florida, but breeds in Central America, as Salvin procured the eggs on

Saddle Cay, and is also found in the West Indian Islands, but does not seem to visit the coasts of South America.

This is a social bird, and is found in great numbers in company with other Terns, especially the Noddies (*Anous*). Salvin found it common about the Cays of the Belize coast, where it is known to the Creoles as the "Rocky Bird." He discovered its eggs on Saddle Cay on the 10th of May: a little sand was scratched away for a nest, under such shelter as the bushes that grew nearest the beach afforded [8 10]. *S. anæstheta* was also found nesting at Clarence Harbour by Mr. Cory, in company with *S. dougalli* and *S. fuliginosa*, the eggs resembling those of the last named bird, but being more spotted about the larger end; they were deposited in sheltered clefts in ledges of rocks or in cavities amongst the loose boulders which lined the sea-shore [3].

According to Mr. Oates, the eggs are usually of a blunt oval form, but some are rather pointed at the smaller end. The ground-colour varies from cream to rich pinkish-buff, and this is marked with specks, spots, and blotches of reddish-brown. These markings are not very thickly distributed over the shell, nor are they of very large size, but they are distinct and sharply defined, and it is seldom that two or more are confluent, while the underlying pattern is of a pale purple colour [7].

8. **Sterna fuliginosa.**

L'Hirondelle de mer à grande envergure, Buff. Hist. Nat. Ois. viii. p. 345 [1].

Sooty Tern, Lath. Gen. Syn. iii. 2, p. 352 [2].

Sterna fuliginosa, Gm. Syst. Nat. i. p. 605 [3]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 312 [4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 26 [5]; Saunders, Cat. Birds Brit. Mus. xxv. p. 106 [6]; Oates, Cat. Eggs Brit. Mus. i. p. 191 [7]; Anthony, Auk, xv. p. 316 [8].

Haliplana fuliginosa, Coues, Ibis, 1864, p. 392 [9]; Salv. Ibis, 1864, pp. 381 [10], 385 [11]; 1866, p. 200 [12]; P. Z. S. 1867, p. 161 [13]; Lawr. Ann. Lyc. N. Y. viii. p. 184 [14].

Onychoprion fuliginosus, Scl. & Salv. P. Z. S. 1871, p. 572 [15].

Haliplana fuliginosa, var. *crissalis* (Baird, MSS.), Grayson, Pr. Bost. Soc. N. H. xiv. pp. 285 [16], 318 [17]; Lawr. Mem. Bost. Soc. N. H. ii. p. 318 [18].

Sterna fuliginosa crissalis, Nelson, N. Amer. Fauna, no. 14, p. 24 [19].

Ptil. æstiv. S. anæsthetæ similis, sed major: supra fuliginoso-nigricans, interscapulio minime pallidiore, sed dorso concolore; fronte alba latiore et supercilio haud pone oculum posticum producto; corpore subtus albo, lateribus et crisso vix cineraceo lavatis: rostro et pedibus nigris, vix rubro tinctis; iride castanea. Long. tota circa 16·0, alæ 11·5, caudæ 3·1, rectrice extima 6·0, culm. 1·8, tarsi 0·95. (Descr. maris adulti ex Southern Water Cay. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed loris pileoque albo maculatis distinguenda.

Juv. notæo toto fuliginoso-brunneo, plumis singulis albido marginatis: subtus fuliginosa, plumis basaliter albidis, abdomine imo albo: rostro et pedibus rubro-brunneis. (Descr. avis jun. ex insula "Ascencion" dicta. Mus. Brit.)

Hab. North America, Carolinas, casually to New England [5].—Revillagigedo Is., Socorro I. (*Grayson* [16 18 19], *Anthony* [8]).—W. Mexico, Mazatlan (*Forrer* [6]), Isabel I., off San Blas, Tres Marias Is. (*Grayson* [4 16 18], *Nelson* [19]); British Honduras, Cays of the Belize coast [12], Curlew Cay [10 11 12], Saddle Cay [9 12], Southern

Water Cay[6] (*O. S.*); Honduras, Ruatan I. (*Gaumer*[7]); Nicaragua, Greytown (*Holland*[14]); Panama (*M'Leannan*[6]), Santiago de Veragua (*Arcé*[6 13]).—Islands of all Tropical Oceans, but almost unknown on the Pacific side of South America[6].

The well-known "Sooty" Tern is very similar in colour to the preceding species, but is distinguished by its larger size and uniform mantle, which is not paler than the rest of the upper surface, as in *S. anæstheta*: the frontal white band is broader, and the white streak above the eyes is also wider and does not reach beyond them, being separated by a narrow continuation of the loral stripe; the inner toe is also much less excised than in *S. anæstheta*[6]. The young birds are sooty-brown below. Mr. Howard Saunders gives the habitat of the species as follows:—"Tropical and juxta-tropical seas, wherever suitable islands and reefs exist; occasionally wandering to Maine in North America, and to Europe, even as far as England. Almost unknown on the South American side of the Pacific; otherwise very generally distributed." *S. fuliginosa* occurs plentifully on the islands off the southern coast of Florida[4], and is found on both sides of Central America, breeding on the islands off the coast of British Honduras and also on Isabel Island, near San Blas, in Western Mexico[16 17]. Nelson found it plentiful in the vicinity of the Tres Marias, breeding on Isabel. He says that the species is never seen near the shore of the mainland, usually keeping far out at sea. It appears to be seminocturnal, and is a constant resident throughout the locality[19]. Grayson also noticed *S. fuliginosa* near the Tres Marias and Socorro Island, but that it was only seen in scattered parties about the Revillagigedo group[16 19].

In certain spots, such as the Island of Ascension, the Sooty Terns breed in incredible numbers, laying but one egg on the ground, without any attempt at a nest. The eggs resemble those of *S. anæstheta*, but are somewhat larger; the surface-markings are coarser and of a brighter reddish-brown, frequently blending together at the broad end to form an irregular cap or zone; the ground-colour is usually of a creamy tint, and comparatively few eggs are tinged with pink; the underlying markings are generally large and clear[7].

9. **Sterna antillarum.**

Sternula antillarum, Less. Descr. Mamm. et Ois. p. 256[1].

Sterna antillarum, Salv. Ibis, 1864, pp. 384[2], 387[3]; 1866, p. 199[4]; Coues, Ibis, 1864, p. 390[5]; Scl. & Salv. P. Z. S. 1871, p. 571[6]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 52[7]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 309[8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 26[9]; Saunders, Cat. Birds Brit. Mus. xxv. p. 122[10]; Oates, Cat. Eggs Brit. Mus. i. p. 194, t. 14. fig. 3[11].

Sterna superciliaris (nec Vieill.), Lawr. Mem. Bost. Soc. N. H. ii. p. 318[12].

Sterna frenata, Dresser, Ibis, 1866, p. 44[13].

Ptil. æstiv. Minima; supra clare cinerea; loris et pileo toto nuchaque nigerrimis; collo postico et interscapulio summo vix albicantioribus; fronte usque ad supercilium anticum pure alba; alis dorso

concoloribus, primariis et secundariis externis intus albis, tectricibus primariorum et remigibus duobus extimis plerumque nigris, his extus et juxta rhachidem nigram late dimidiatim nigris ; rectricibus dorso concoloribus, rectrice extima alba, apicem versus medialiter cinerascente ; facie laterali et corpore subtus toto albis : rostro aurantiaco ad apicem nigro ; pedibus aurantiacis. Long. tota circa 8·8, alæ 6·8, caudæ 1·65, rectrice extima 3·5, culm. 1·1, tarsi 0·55. (Descr. maris adulti ex San Blas. Mus. nostr.)

Av. hornot. similis adultis, sed pileo albo vix cinereo lavato, regione anteoculari usque ad nucham nigricante, pilei postice cincturam formante ; tectricibus minimis nigricantibus, fasciam alarem exhibentibus : rostro nigricante ; pedibus brunnescentibus. (Descr. maris hornot. ex San Blas. Mus. nostr.)

Hab. Temperate North America, casually to Labrador, breeding nearly throughout its range [9 10].—Mexico, Matamoros (*Dresser* [13]), Manzanillo, Colima (*Xantus* [12]), San Blas, Tepic (*Richardson* [10]), Gulf of Tehuantepec, San Mateo (*Sumichrast* [7]) ; British Honduras, Long Cay [2 10], Grassy Cay [3], Glover's Reef [5 10] (*O. S.*) ; Guatemala, Pacific coast [4], Coban [8] (*O. S.*).—South America, coast of Venezuela [10] ; West Indies [10].—West Africa [10].

The Little Tern of North America differs from its European representative, *S. minuta*, in having the rump grey, like the back, and not white as in the Old-World species. It also has the bill tipped with black, and this character distinguishes the bird from *S. superciliaris* of Amazonia, which has a stout and entirely yellow bill.

S. antillarum breeds throughout its range along the Atlantic coast of North America from the Bay of Fundy southwards to Texas, as well as in Cuba, and on the islands of the Bay of British Honduras, where Salvin found numbers of nests in May. The species was likewise met with in Western Mexico by Sumichrast and Xantus, and Salvin also noticed it on the Pacific coast of Guatemala.

It is a shore-loving species, seldom ascending the larger rivers. Its nest consists of a mere depression in the sand. The eggs are similar to those of the Little Tern of Europe, being of a pale cream-colour, drab, or buff, rather thickly marked with spots and blotches of different shades of brown [11].

ANOUS.

Anous, Steph. in Shaw's Gen. Zool. xiii. pt. 1, p. 139 (1826) ; Saunders, Cat. Birds Brit. Mus. xxv. p. 136 (1896).

In *Anous* the tail is graduated, the feathers being pointed, with the outer pair shorter than the next pair ; the middle toe and claw shorter than the exposed culmen. The bill is strong and decurved, the distance from the angle of the genys to the tip less than that to the gape. The fourth pair of rectrices from the outside the longest.

The members of the present genus are all birds of a sombre colour. They inhabit the islands of the tropical and juxta-tropical seas, and breed in great communities, making their nest on the ground or on a bush or tree, or even a ledge of rock, and laying but one egg.

The Common Noddy (*A. stolidus*) has a very wide range, occurring in both hemispheres. Mr. Howard Saunders recognizes, with hesitation, a second species,

A. galapagensis, Sharpe, from the Galapagos Islands, and a third (*A. pileatus*) has been described as *A. ridgwayi* from the Pacific side of Central America.

1. Anous stolidus.

The Noddy, Catesby, Nat. Hist. Carolina, i. p. 88, t. 88 (1731) [1].

Sterna stolida, Linn. Amœn. Acad. iv. p. 240 (1759)[2]; Licht. Preis-Verz. Mex. Vög. p. 3 (1830)[3]; Cab. J. f. Orn. 1863, p. 59[4].

Anous stolidus, Salv. Ibis, 1864, pp. 383[5], 385[6]; Coues, t. c. p. 392[7]; Scl. & Salv. P. Z. S. 1870, p. 838[8]; 1871, p. 566[9]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 325, pt.[10]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 27[11]; Saunders, Cat. Birds Brit. Mus. xxv. p. 136[12]; Oates, Cat. Eggs Brit. Mus. i. p. 197[13].

Anous superciliosus, Sharpe, Phil. Trans. 168 (extra vol.), p. 468[14].

Fumoso-brunneus, vix schistaceo adumbratus, remigibus cum tectricibus primariorum et rectricibus nigris, secundariis intimis dorso concoloribus; pileo pallide margaritaceo-cinereo, postice et ad nucham graduatim sed evidenter cinereo, fronte albidiore; loris et palpebris nigerrimis; facie reliqua laterali fumoso-brunnea, antice vix schistaceo lavata; subalaribus pallidioribus magis cinerascenti-brunneis: rostro nigricante; pedibus rubescenti-brunneis, palmis interdigitalibus ochracescentibus. Long. tota circa 14·5, alæ 10·3, caudæ 5·5, culm. 1·7, tarsi 0·9.

♀ *ad.* haud a mari distinguendus. Long. tota circa 14·5, alæ 10·4. (Descr. maris et feminæ ex Glover's Reef. Mus. nostr.)

Juv. adultis similis, sed brunnescentior, minime schistaceo adumbratus.

Pull. Fuliginoso-brunneus, abdomine albicantiore, pileo antico canescente. (Descr. av. pull. ex Cay Dolores Channel. Mus. nostr.)

Hab. North America, Gulf and South Atlantic States [11].—Mexico (*Deppe & Schiede* [3 4]), coast of Mexico [14]; British Honduras, South-west-of-all Cay [5 13], Curlew Cay [6], Glover's Reef [7 12 13], Cay Dolores Channel [12], Southern Water Cay [13] (*O. S.*); Honduras (*Whitely* [8]).—West Indies [12].—Tropical and juxta-Tropical seas of the Old World [12].

The Noddy occurs in considerable numbers on the islands off the coast of British Honduras, and Salvin found it breeding on many of them, especially on "South-west-of-all" Cay and "Curlew" Cay. The nest was made of sticks, being a large loose structure heaped together at the top of a cocoanut-tree or on the outer branches of a mangrove. The species has also been found off the coasts of the mainland of Mexico and Honduras, and occurs on many of the West Indian Islands.

A. stolidus is a very common species wherever it occurs, and it is said by Mr. Howard Saunders to breed throughout its extensive range and sometimes in great numbers. The nest is often placed on the ground or on a small bush, but occasionally the egg is deposited in the hollow of a rock.

The egg is oval in form, of a white or pinkish stone-colour, marked with various shades of reddish-brown, which are occasionally almost obsolete; while, on the other hand, some examples are boldly blotched, especially towards the larger end [13].

2. Anous pileatus.

Le Petit Fouquet des Philippines, Sonn. Voy. Nouv. Guin. p. 125, t. 85 [1].

Sterna pileata, Scop. Del. Faun. et Flor. Insubr. ii. p. 92, ex Sonnerat [2].

Anous pileatus, Gray, Gen. Birds, iii. p. 661 [3].

Anous stolidus pileatus, Hartert, Nov. Zool. vii. p. 9 [4].

Anous rousseaui, Hartl. Beitr. Orn. Madag. p. 86 [5].

Anous stolidus rousseaui, Ridgway, Pr. U. S. Nat. Mus. xix. p. 645 [6].

Anous stolidus (nec Linn.), Scl. & Salv. Ibis, 1859, p. 233 [7]; Lawr. Mem. Bost. Soc. N. H. ii. p. 318 [8]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 325, pt. [9]; Saunders, Cat. Birds Brit. Mus. xxv. p. 137 [10].

Anous stolidus ridgwayi, Anthony, Auk, xv. pp. 36, 316 [11]; Nelson, N. Amer. Fauna, no. 14, p. 26 [12].

Anous ridgwayi, Sharpe, Hand-l. Birds, i. p. 137 [13]; Oates, Cat. Eggs Brit. Mus. i. p. 198, t. 15. fig. 6 [14].

A. stolido similis, sed saturatior, nigricantior, notæo toto, gutture et pectore antico plumbeo lavatis; facie laterali nigricanti-plumbea, loris et regione oculari nigerrimis; palpebris albis; pileo antico canescente, fronte basali et linea angusta superciliari albis, pileo postico graduatim cinereo, nucha vix a collo reliquo diversa. Long. tota circa 15·0, alæ 10·7, caudæ 6·4, culm. 1·5, tarsi 0·85. (Descr. feminæ adultæ ex Clipperton I. Mus. Rothschild.)

Hab. Revillagigedo Is., Socorro I. (*Anthony* [11]).—W. Mexico, Isabel Island off San Blas (*Grayson* [8], *Nelson* [12]), Tres Marias Is. (*Nelson* [12]), Clipperton I. (*Beck*); Guatemala, Pacific coast (*O. S.* [7]).—Pacific Ocean generally, from the Philippines and coast of China to Laysan [4 10].

The Pacific Noddy appears to be distinguishable from the true *A. stolidus* of the Atlantic, but its full range has yet to be determined. I see no reason, however, for doubting the conclusion arrived at by Mr. Hartert, that the birds examined by him from the Caroline Islands are specifically identical with those from the Revillagigedo group; a Formosan specimen in the British Museum also seems to be of the same species. The Noddy of Madagascar (*A. rousseaui*) is also considered by Mr. Hartert to belong to the Pacific form, the oldest name for which appears to be *Sterna pileata*, Scopoli. It is this form also which Mr. Anthony recently described as *Anous ridgwayi* from Socorro Island, and Mr. Rothschild has kindly lent me several specimens from Clipperton Island, Laysan, and the Carolines, all of which seem to belong to one and the same species.

Mr. Hartert [4] points out that the Pacific form of the Noddy has a longer and more graduated tail than the true *A. stolidus*. The crown is greyer and never inclining to white, as in the latter bird, and the general colour of the plumage is more sooty and not so brown. On comparing the series of specimens lent by Mr. Rothschild, it seems to me that these characters are recognizable, and I have therefore acknowledged *Anous pileatus* as distinct from *A. stolidus*.

Grayson met with the Pacific Noddy on Isabel Island, near San Blas [8], and Mr. Nelson observed it near the Tres Marias Islands [12]. Mr. Anthony obtained his

type of *A. ridgwayi* on Socorro Island [11], where it was breeding. Grayson had formerly noted that a Noddy replaced the Sooty Tern on the Revillagigedo group of islands (*cf.* Proc. Bost. Soc. Nat. Hist. xiv. p. 301). It is also doubtless this bird which Salvin observed off the Pacific coast of Guatemala [7]. Grayson found *A. pileatus* breeding in communities on the north end of Isabel Island, the nests being placed under overhanging rocks and quite inaccessible [8].

Mr. Nelson noticed numbers of these Terns at sea between San Blas and the Tres Marias Islands, off which a few were seen during May. The species was common at the end of April on Isabel at the north-eastern point of the island. Here it inhabited the rugged faces of the cliffs and rocks and was very tame. He writes:—"While perched on the black lava-cliffs, their dark colour blended so closely with the background that it was very difficult to distinguish them, even when within fair gunshot. The day we left the island we visited their resting-place and fired a dozen or more shots while they were on the rocks or flying about, but the noise of the reports did not seem to give them much alarm. They would circle out a short distance, and, after hovering for a few moments over their killed or wounded companions floating in the water, would return to the same part of the cliff from which they had just been started. They were not heard to utter any notes, and the silence with which they would suddenly appear out of the cliff, and then return and vanish again in its gloomy face, produced an uncanny effect." Mr. Nelson says that, when at sea, the Noddies fly close along the surface of the waves with long graceful wing-strokes, their dark colour and habit of keeping close to the water causing them on many occasions to be mistaken for Petrels [12].

Mr. Anthony found this species breeding in abundance on a small rock about a mile off the western end of Socorro Island. After several unsuccessful attempts, a landing was made at the risk of life and limb, and a series of eggs obtained. The latter were all laid on the bare rock, without any attempt at nest-building, and were often placed on protruding shelves but little wider than the egg, so that it was a mystery how they escaped rolling off into the sea [11].

Three eggs from Socorro, sent to the British Museum by Mr. Anthony, are described by Mr. Oates as remarkably pale in colour, the ground being white or very pale cream-colour, with a cluster of rusty-brown spots or blotches at the large end. These brown spots are almost entirely absent from the remainder of the egg, while the pale purple underlying spots are more evenly distributed over the whole shell [14].

MICRANOUS.

Micranous, Saunders, Bull. Brit. Orn. Club, iv. p. xix (1895); Cat. Birds Brit. Mus. xxv. p. 143 (1896).

Micranous embraces a small group of Noddy Terns which are of sombre plumage,

like the members of the genus *Anous*, but are of a slighter and more graceful form. The bill is slender and long, the distance from the angle of the genys longer than that to the gape, while in the tail the third pair of rectrices from the outside are the longest.

The range of the genus is the same as that of the true Noddies, viz. the tropical and subtropical seas. Mr. Howard Saunders recognizes three species: *M. tenuirostris* and *M. leucocapillus*, with a wide range in the Old World, the latter species alone occurring within our limits; a third form, *M. hawaiiensis*, is confined to the Sandwich Islands.

1. Micranous leucocapillus.

Anous leucocapillus, Gould, P. Z. S. 1845, p. 103[1].

Micranous leucocapillus, Saunders, Cat. Birds Brit. Mus. xxv. p. 145[2]; Oates, Cat. Eggs Brit. Mus. i. p. 199[3].

Anous tenuirostris (nec Temm.), Salv. Ibis, 1864, p. 383[4]; 1866, p. 200[5]; Coues, Ibis, 1864, p. 393[6]; Scl. & Salv. P. Z. S. 1871, p. 566[7].

Supra fuliginoso-niger, plumbeo adumbratus; alis caudaque nigricantibus, rhachidibus brunneis; corpore subtus toto fuliginoso-nigro, facie laterali colloque, gutture et pectore summo plumbeo distincte adumbratis, abdomine sordidiore; pileo canescenti-albo, nucham versus clarius cinereo; loris et plumis anteocularibus et oculum circumdantibus nigerrimis: rostro nigro; pedibus saturate brunneis. Long. tota circa 12·5, alæ 9·0, caudæ 4·6, culm. 1·8, tarsi 0·85. (Descr. maris adulti ex Glover's Reef. Mus. nostr.)

♀ haud a mari distinguendus. Long. tota circa 12·5, alæ 8·9. (Descr. maris et feminæ adultæ ex Glover's Reef. Mus. nostr.)

Hab. British Honduras, Glover's Reef[6], South-west-of-all Cay (*O. S.*[4 5]).—Intertropical Atlantic Ocean[2]; Indian Ocean[2]; Malayasia[2]; Australia[2]; Pacific Ocean to Society Is.[2].

This species is distinguished from the typical Noddies by its small size and white head. It has been found only in one place in Central America, viz., on the islets off the coast of British Honduras[7]. Here it was discovered by Salvin nesting on "South-west-of-all," a small Cay on the outer margin of Glover's Reef[4 5].

In habits *M. leucocapillus* resembles the larger kinds of Noddies (*Anous*). Salvin says that the nest of the "Piccary Noddy" was small and compact, made of slender twigs, seaweed, and bits of grass, and glued together in every available fork and on every horizontal branch. This species almost exclusively monopolized the high mangroves on the windward side of the island. In one tree there were over seventy nests.

The eggs are described by Mr. Oates as mostly of a broad oval form, though some are quite elliptical, the ground-colour varying from pure white to cream and pale pink, with the markings occasionally evenly distributed, but generally collected at the larger end, and consisting of specks, lines, and dashes, and varying in size from spots to blotches of reddish-brown or chocolate-brown, with a few underlying markings of pale purple. As with the Noddies, feebly marked specimens are not unfrequent[3].

Subfam. *RHYNCHOPINÆ.*

The "Skimmers," by which name this subfamily of Terns is usually known, require but little characterization, as they are remarkable above all other sea-birds for their long scissor-like bill, in which the under mandible greatly exceeds the maxilla in length.

RHYNCHOPS.

Rynchops, Linn. Syst. Nat. i. p. 228 (1766).
Rhynchops, Saunders, Cat. Birds Brit. Mus. xxv. p. 152 (1896).

The characters of the genus are those of the subfamily.

Five species are known, of which three are American, one African, and the other Indian. They occur on the coasts, but likewise ascend the great streams of the tropical countries in which they live to an immense distance, and lay their eggs on the sand-banks.

1. Rhynchops nigra.

The Cut Water, Catesby, Nat. Hist. Carol. i. p. 90, t. 90 (1731) [1].
Rhynchops nigra, Linn. Syst. Nat. i. p. 228 [2]; Scl. P. Z. S. 1864, p. 179 [3]; Salv. Ibis, 1865, p. 193 [4]; 1866, p. 200 [5]; 1889, p. 379 [6]; Dresser, Ibis, 1866, p. 45 [7]; Dugès, La Nat. i. p. 142 [8]; Lawr. Mem. Bost. Soc. N. H. ii. p. 318 [9]; Bull. U. S. Nat. Mus. no. 4, p. 52 [10]; Sumichr. La Nat. v. p. 234 [11]; Boucard, P. Z. S. 1883, p. 462 [12]; Nutting, Pr. U. S. Nat. Mus. vi. p. 409 [13]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 192 [14]; Herrera, La Nat. (2) i. pp. 188 [15], 329 [16]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 27 [17]; Saunders, Cat. Birds Brit. Mus. xxv. p. 153 [18]; Oates, Cat. Eggs Brit. Mus. i. p. 200, t. 15. fig. 8 [19].

Ptil. hiem. Supra brunnescenti-nigra, alis nigricantioribus, primariis intimis intus ad apicem albis, secundariis intus et ad apicem late albis; dorsi imi lateribus et supracaudalibus extimis fere albis; rectricibus albis, plus minusve medialiter brunneis; pileo brunneo, postice vix nigricante; regione postoculari quoque nigricanti-brunnea; fronte et facie laterali, cum torque collari lato et corpore subtus toto, pure albis; tectricibus alarum minimis albis; subalaribus et axillaribus albis, margine alarum brunneo; remigibus intus cinerascenti-brunneis: rostro corallino, ad apicem nigro; pedibus corallinis; iride brunnea. Long. tota circa 15·0, alæ 13·2, caudæ 4·2, rostro 2·8, tarsi 1·2. (Descr. feminæ adultæ ex Acapam. Mus. nostr.)

Juv. ptilosi hiemali similis, sed collo postico brunneo albido striolato.

Ptil. æstiv. Supra nigerrima, torque albo collari nullo; fronte, facie laterali et corpore subtus toto pure albis: rostro rubro, medialiter flavicante, ad apicem nigro; pedibus aurantiaco-rubris; iride brunnea. Long. tota circa 16·0, alæ 13·6. (Descr. maris adulti ex Corpus Christi. Mus. nostr.)

Hab. North America, eastern coast to New Jersey, and casually to the Bay of Fundy [17 18].—Mexico, Matamoros Lagoon (*Dresser* [7], *Berlandier* [14]), Tampico (*Berlandier* [14], *Richardson* [18]), Valley of Mexico (*Herrera* [15 16]), city of Mexico (*White* [3]), Guanajuato (*Dugès* [8]), San Blas (*Grayson* [9]), Zacatula River (*Xantus* [9]), coasts of the Gulf of Tehuantepec [11], San Mateo [10] (*Sumichrast*), northern coasts of Yucatan [12], Rio Lagartos [18], Progreso [18], Cozumel I. [6 18] (*Gaumer*);

GUATEMALA, Acapam, Pacific coast (*O. S.* [4 5 18]); NICARAGUA, Los Sábalos (*Nutting* [13]).—TRINIDAD [18]; WEST INDIES [18].

The "Black Skimmer," or "Scissor-bill," is distinguished by the broad white edging to the secondaries and by the white under wing-coverts; the tail-feathers are white, with more or less brown in their centres.

Grayson states that he has observed the species in Western Mexico near San Blas during the summer months, where it was not very numerous, being, doubtless, chiefly a winter visitor to Central America. On the western side it has been observed by Sumichrast on the coast of the Gulf of Tehuantepec, and Salvin procured specimens on the Acapam Lagoon about two leagues from Chiapam on the Pacific coast of Guatemala [4 5 18]. From the eastern side of our region *R. nigra* has been recorded by Mr. Dresser and Dr. Berlandier. The latter regarded it as a rare species on the Mexican coast, and met with only one example near Tampico [14]. Dr. Gaumer states that on the northern coast of Yucatan many thousands could be seen at any time at the mouths of the rivers [12]. It has also been met with by Mr. Nutting at Los Sábalos, a place situated about thirty miles from the Lake of Nicaragua on the River San Juan [13].

The Skimmer is seldom seen at sea, except when crossing from island to island on migration. It is a coast-frequenter, often collecting in enormous numbers, and is met with occasionally in small parties round the shores of inland lakes and along the larger rivers. *R. nigra* has all the habits of a Tern, making no nest beyond a depression in the sand, and breeding in large communities. It feeds on small fish, following them on the surface of the water and catching the minute fry with its scissor-like bill; in a similar manner it will plough up the mud in search of small molluscs. This bird has a strong flight, capable of being maintained against the most violent gale [14].

The eggs vary from a long and narrow to a broad pointed oval form, the ground-colour being creamy or very pale buff, sometimes with a pinkish tinge. The markings consist of spots and blotches of black or reddish-brown, sometimes forming confluent patches, and the underlying pattern is dark purple [19].

2. Rhynchops melanura.

Rhynchops melanura, Swains. Classif. Birds, ii. p. 373 [1]; Saunders, Cat. Birds Brit. Mus. xxv. p. 156 [2].

R. nigræ similis, sed secundariis angustius albo marginatis, rectricibus saturate brunneis, angustissime albido limbatis, subalaribus fumoso-cinereis distinguenda. Long. tota circa 15·5, alæ 12·5, caudæ 4·7, rostri 3·2 tarsi 1·1. (Descr. av. adult. ex Cozumel I. Mus. nostr.)

Hab. MEXICO, Cozumel I., off Yucatan (*Gaumer* [2]).—COASTS AND RIVERS OF SOUTH AMERICA [2].

This is a South-American species, found throughout the greater part of that continent, and ascending the large rivers for thousands of miles, even to the Huallaga and the foot of the Eastern Andes [2]. Mr. Saunders also states that it occurs on Lake Titicaca, and is found along the Pacific coast, from the Straits of Magellan to Peru, and up the Guayaquil River as far as Babahoyo.

A single specimen from Cozumel Island has been identified by Mr. Howard Saunders as belonging to the present species. This locality is far beyond any range of *R. melanura* previously recorded. The following observations are copied from his volume of the 'Catalogue of Birds' [2]:—"The specimen from Cozumel has distinctly smoke-coloured under wing-coverts, and shows no trace of white on the parapteral feathers; the rectrices are chiefly dark, but the white on their edges is rather wider than in typical *R. melanura*, and so is the whitish band on the wing. The fact that the North American *R. nigra* visits Cozumel is not without significance."

Subfam. *LARINÆ*.

In this subfamily are to be found all the Gulls, large and small, the characteristic feature of the group being the form of the upper mandible, which is the longer, and is bent down over the tip of the lower mandible, thus distinguishing the Gulls from the Terns, in which the bill is slender and both mandibles are of equal length. The tail is usually square, in a few instances forked, and on still rarer occasions wedge-shaped.

The Larinæ are practically cosmopolitan, being found at some period of the year in every quarter of the globe.

LARUS.

Larus, Linn. Syst. Nat. i. p. 224 (1766); Saunders, Cat. Birds Brit. Mus. xxv. p. 169 (1896).

In the Gulls of the typical genus *Larus* the tail is not forked, but is square or very nearly so; the hind toe is moderately or well developed and free, and the lower third of the tibia is bare. The bill is always more than twice as long as it is deep, and is sometimes thrice as long, the nostrils being linear or linear-ovate.

Forty-four species of Gulls are recognized by Mr. Howard Saunders, of which seven occur in Central America. Two only, however, are known to breed there, the rest being winter visitants from more northern regions.

1. Larus philadelphia.

Sterna philadelphia, Ord, in Guthrie's Geogr. 2nd Amer. ed. ii. p. 319 [1].

Chroicocephalus philadelphia, Dugès, La Nat. i. p. 142 [2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [3]; Sanchez, La Nat. i. p. 108 [4].

Larus philadelphia, Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 260 [5]; A. O. U. Check-l.

N. Amer. Birds, 2nd ed. p. 21 [6]; Saunders, Cat. Birds Brit. Mus. xxv. p. 185 [7]; Oates, Cat. Eggs Brit. Mus. i. p. 205 [8].

Ptil. æstiv. Supra margaritaceo-cinereus; tectricibus alarum et secundariis intimis dorso concoloribus, his exterioribus nigro terminatis; ala spuria et tectricibus primariorum pure albis; primariis albis, nigro terminatis, interioribus cinereis, intimis cinereis, secundariis concoloribus; uropygio et cauda pure albis; pileo, facie laterali et gutture toto plumbescenti-nigris; collo postico et laterali, et corpore subtus reliquo, cum subalaribus et remigibus intus pure albis: rostro nigro; pedibus læte aurantiaco-rubris, unguibus nigris; palpebris aurantiacis; iride saturate brunnea. Long. tota circa 13·5, alæ 10·4, caudæ 3·9, culm. 1·3, tarsi 1·45.

♀ haud a mari distinguendus. Long. tota circa 12·5, alæ 10·0. (Descr. maris et feminæ ex Washington, D.C. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed pileo nigro, postice et regione auriculari postica nigro notatis; pedibus carneis.

Juv. ptilosi hiemali similis, sed pileo fuscescenti-brunneo, plumis omnibus albido terminatis et subterminaliter brunnescentibus; cauda nigro terminata distinguendus. (Descr. ♀ juv. ex Ipswich, Mass. Mus. nostr.)

Hab. North America generally, breeding mostly north of the United States [6].—Mexico, Mazatlan (*Grayson* [3]), Guanajuato, Guadalajara (*Dugès* [2]), Jalisco (*Sanchez* [4]).

Bonaparte's Gull is a well-known inhabitant of North America, migrating south in winter along both coasts. At this season of the year it also visits Mexico; but the species must be somewhat uncommon, as, beyond the localities recorded by Dugès [2] and Sanchez [4], it has been met with only at Mazatlan. Grayson [3] states that a few individuals were seen here, and some procured, in a freshwater lagoon near the sea-shore, on the 27th of March, 1868, but he never saw one subsequently [3].

The flight of this Gull is said to be graceful and light, resembling that of a Tern. The bird passes through the interior of North America to its breeding-grounds. MacFarlane observed its nests in the region of Fort Anderson, these being placed in bushes or trees at a height of from four to twenty feet from the ground; one was composed of dark velvety pine-leaves and down, while others were of sticks lined with hay or some soft substance. Richardson and also Kennicott met with it nesting on pine-trees [5].

The eggs, which are usually three, rarely four, in number, are olive-buff, with light or dark brown markings and underlying rather indistinct purplish spots, these being small and having a tendency to form an irregular and ill-defined zone round the larger end [8].

2. Larus franklini.

Larus franklini, Swains. & Richards. Faun. Bor.-Amer., Birds, p. 424, t. 71 [1]; Scl. & Salv. P. Z. S. 1871, p. 577 [2]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 258 [3]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179 [4]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 20 [5]; Saunders, Cat. Birds Brit. Mus. xxv. p. 191 [6]; Oates, Cat. Eggs Brit. Mus. i. p. 206 [7].

Chroicocephalus franklinii, Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [8].

Larus pipixcan, Wagler, Isis, 1831, p. 515 [9].

Larus cucullatus (Licht. MSS.), Reichenb. Natat. t. 23. fig. 296 [10]; Salv. Ibis, 1865, p. 188 [11].

Chroicocephalus cucullatus, Licht. Nomencl. Av. Mus. Berol. p. 98 [12]; Coues, Ibis, 1864, p. 388 [13]; Salv. Ibis, 1866, p. 198 [14].

Chroicocephalus atricilla (nec Linn.), Sclater, P. Z. S. 1864, p. 179 [15].

Ptil. æstiv. Supra cinerascenti-schistaceus; collo postico et laterali et corpore subtus pure albis, hoc roseo induto; pileo undique nigerrimo; fascia supra- et infraoculari albo; uropygio et supracaudalibus lateralibus albis; supracaudalibus reliquis et rectricibus cinereis, lateralibus fere albis; alis cinereis dorso concoloribus, primariis intimis et secundariis albo terminatis, primariis externis albo terminatis, subterminaliter nigro fasciatis, primarii primi pogonio externo nigro: rostro corallino; palpebris coralinis; pedibus sordide rubris; iride sordide grisescenti-brunnea. Long. tota circa 13·5, alæ 11·5, caudæ 4·2, culm. 1·35, tarsi 1·6.

♀ haud a mari distinguendus. Long. tota circa 13·9, alæ 10·7. (Descr. maris et feminæ ex Champerico. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed pileo albo, nigro notato.

Juv. Sordide cineraceus, alis brunnescentibus, torque collari albo indistincto, cinereo adumbrato; fronte et facie laterali albis, pileo reliquo albicante nigro marmorato, plumis nigris, albido marginatis; cauda pallide cinerea, terminaliter late brunneo fasciata. (Descr. feminæ junioris ex Chiapam. Mus. nostr.)

Hab. Interior of North America, chiefly west of the Mississippi River and east of the Rocky Mountains, breeding from Iowa northward [5].—Mexico [10 12] (*Wagler* [9]), west coast [6], lakes of Mexico (*Keerl & Boucard* [2]), city of Mexico (*White* [6 15]), Zacatecas (*Richardson* [6]), Mazatlan (*Grayson* [3 8]), Laguna de San Baltazar, Puebla (*Ferrari-Perez* [4]), Progreso, Yucatan (*mus. nostr.* [6]); Guatemala, Pacific coast [2 14], Chiapam [6 13], Champerico [6 11] (*O. S.*); Panama (*Suckley* [2]).—West Coast of South America to Chile [6]; West Indies, St. Bartholomew [6].

The present species, like the preceding, belongs to the hooded section of the genus *Larus* and has a black head in summer. It differs from *L. philadelphia* in its dark slaty-grey mantle, and has the outer quills grey above, with a broad white tip and a broad black subterminal bar.

L. franklini breeds in marshes and is found in the interior of North America in summer, occurring in Central America only in the winter months. Grayson procured a few specimens at Mazatlan in December, but it was not common and was only observed during that month [3 8]. It is scarcely known on the eastern coasts of Mexico, and appears to migrate through the interior, being found on the lakes and in the Valley of Mexico in winter; it has, however, been met with at Progreso in Northern Yucatan [6].

Salvin noticed the species on the Pacific coast of Guatemala, where it was generally a short way out at sea [14], and he procured specimens at Champerico [11] and on the lagoon of Chiapam [13]. It ranges along the west coast of South America as far as Concepcion in Chile [6].

The nest is placed upon the water among the bulrushes, of which it is composed [3]. The eggs in our collection vary in form from pointed to a blunt oval; the ground-colour is olive-buff, spotted and blotched with dark and light brown, and underlying pale

purple. On two eggs in the British Museum the markings take the form of streaks and lines, which are interlaced and show an intricate pattern [7].

3. Larus atricilla.

Laughing Gull, Catesby, Nat. Hist. Carol. i. p. 89, t. 89 [1].

Larus atricilla, Linn. Syst. Nat. i. p. 225 [2]; Salv. Ibis, 1864, p. 381 [3]; 1865, pp. 188 [4], 190 [5]; 1889, p. 379 [6]; Scl. & Salv. P. Z. S. 1871, p. 576 [7]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 254 [8]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179 [9]; Herrera, La Nat. (2) i. pp. 188 [10], 329 [11]; Stone, Pr. Acad. Phil. 1890, p. 202 [12]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 20 [13]; Saunders, Cat. Birds Brit. Mus. xxv. p. 194 [14]; Oates, Cat. Eggs Brit. Mus. i. p. 206 [15].

Chroicocephalus atricilla, Scl. & Salv. Ibis, 1859, p. 233 [16]; Coues, Ibis, 1864, p. 388 [17]; Dugès, La Nat. i. p. 142 [18]; Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [19]; Bull. U. S. Nat. Mus. no. 4, p. 51 [20]; Sumichr. La Nat. v. p. 234 [21]; Zeledon, Cat. Aves Costa Rica, p. 36 [22].

L. franklini similis, et interscapulio saturate schistaceo-cinereo, sed remigibus exterioribus nigris distinguendus: rostro coccineo; pedibus sordide rubris; iride brunnea. Long. tota circa 14·0, alæ 12·1, caudæ 4·7, culm. 1·4, tarsi 1·75. (Descr. maris adulti ex Lighthouse Reef. Mus. nostr.)

Hab. North America, Atlantic and Gulf coasts of the United States, north to Maine and Nova Scotia [13].—Mexico, Pacific coast (*Mathew* [14]), Mazatlan (*Grayson* [8 19]), Manzanillo, Colima (*Lloyd* [14]), Guanajuato, Guadalajara (*Dugès* [18]), coasts of the Gulf of Tehuantepec, Juchitan, Ventosa, San Mateo (*Sumichrast* [20 21]), Valley of Mexico (*Herrera* [10 11]), Vera Cruz, Jalapa, Vega de Alatorre (*Ferrari-Perez* [9]), Progreso, Yucatan (*Stone & Baker* [12]), Cozumel I. (*Gaumer* [6]); British Honduras, Belize [14 15], Saddle Cay [3], Lighthouse Reef [14] (*O. S.*); Guatemala, Atlantic and Pacific coasts [7], Chiapam [14 17], Champerico [4 5] (*O. S.*), Vera Paz (*Hague* [14]); Costa Rica (*Zeledon* [22]). —Guiana [14]; N. Brazil [14]; W. coast of America to N. Peru [14]; West Indies [14].

The Laughing Gull is a maritime species, chiefly frequenting the tidal waters on the eastern side of North America to the Gulf of Mexico and extending to the West Indies, breeding throughout this area [14]. Salvin found *L. atricilla* common near Belize in May, and it is said to nest on the Cays along the coast [3]. In Vera Cruz, Ferrari-Perez met with the species at Vega de Alatorre in July [9]. On the eastern coast of America it ranges in winter to Guiana and Northern Brazil [14]; westward the species reaches California and the coasts of Mexico. Sumichrast met with this Gull in Tehuantepec from August to February [20], and Herrera says that it comes to the Valley of Mexico early in October [10]. We have specimens from both coasts of Guatemala, those from the Atlantic in summer plumage, either perfectly or partially assumed, while those obtained from Chiapam on the Pacific side are in winter or immature dress.

According to Dr. Brewer, this species breeds in large companies. Audubon says that it never travels beyond the tidal waters on the south and east coast of North America. It is timid and shy as a rule, but when its breeding-places are attacked it becomes very bold in their defence [8].

The nest is simply a depression in the soil, with a slight lining of dry grass. The eggs are olive-buff, with spots and small blotches of various shades of brown, sometimes collected near the larger end, with inconspicuous spots of pale underlying purple [15].

4. Larus heermanni.

Larus heermanni, Cass. Pr. Acad. Phil. 1852, p. 187 [1]; Salv. Ibis, 1865, p. 190 [2]; 1866, p. 198 [3]; Scl. & Salv. P. Z. S. 1871, p. 574 [4]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 252 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 20 [6]; Saunders, Cat. Birds Brit. Mus. xxv. p. 225 [7]; Nelson, N. Amer. Fauna, no. 14, p. 23 [8].

Blasipus heermanni, Coues, Ibis, 1864, p. 388 [9]; Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [10].

Supra schistaceus, alis saturatioribus, remigibus nigricantibus, primariis intimis anguste et secundariis latius grisescenti-albo terminatis; tectricibus primariorum extus grisescenti-albidis; supracaudalibus cineraceis; cauda nigra, albo terminata; collo undique et corpore subtus pallide cineraceis, abdomine dilutiore; pileo, faciei lateribus et gutture toto albis; subalaribus et remigibus intus plumbescenti-brunneis, axillaribus cinerascentioribus: rostro rubro, nigro sæpius terminato; pedibus nigris; iride brunnescenti-grisea; annulo periophthalmico rubro. Long. tota circa 18·0, alæ 14·0, caudæ 5·4, culm. 2·0, tarsi 2·0. (Descr. maris adulti ex Monterey. Mus. Brit.)

♀ mari similis, sed paullo minor et rostro debiliore.

Ptil. hiem. ptilosi æstivæ similis, sed pileo et facie laterali cum gutture imo grisescenti-fusco striolatis, gula tantum albida: rostro pallide rubro, nigro latius terminato. (Descr. feminæ adultæ ex Santa Barbara. Mus. nostr.)

Juv. Fuliginoso-brunneus, notæi plumis plurimis pallidiore brunneo marginatis: subtus vix cinerascente lavatis. (Descr. avis jun. ex Chiapam. Mus. nostr.)

Hab. Pacific Coast of North America from British Columbia southward [6 7].—Mexico, coast of Western Mexico (*Abert* [4]), Mazatlan (*Grayson* [10]), Isabel I., off San Blas (*Grayson* [10], *Nelson* [8]), Tres Marias Is., Maria Cleofa I. (*Nelson* [8]); Guatemala, Pacific coast [3 4], Chiapam [2 7 9], San José [7] (*O. S.*).

This is a member of a small group which is restricted to the Pacific, and is, moreover, confined to the American side, with the exception of *L. crassirostris* of Japan and China. Heermann's Gull occurs on the Pacific side of North America during the breeding-season, and migrates south along the Pacific coast of Central America as far as Chiapam in Guatemala, where Salvin met with some young birds on the shore and lagoons in January [3]. Grayson shot specimens of *L. heermanni* near Mazatlan in February and March, and considered it to be only a winter visitant [10]; but he appears to have afterwards found it breeding, as an egg in the U. S. National Museum procured by him is recorded as being from that locality [5].

Mr. E. W. Nelson met with two or three pairs on Isabel Island, and half a dozen others about the Tres Marias. He found a nest on May 30th, which had been occupied earlier in the season, on a rocky islet off the shore of Maria Cleofa, and full-grown young were also seen on the rocks. The old birds pursued the Blue-footed Gannets in pairs, and forced the latter to disgorge the fish they had captured. He remarks that the Gulls are bold and noisy aggressors when they wish to take advantage of

the Gannets, and about the breeding-places they feed largely at the expense of the latter [8].

Heermann's Gull feeds on small fish, crustacea, and mollusca, and sometimes robs the Pelicans of their prey [8]. The egg is described by Dr. Brewer as of a deep drab-colour, with large dark bistre blotches scattered over the surface and a few lilac under-markings [5].

5. Larus argentatus.

Larus argentatus, Brünn. Orn. Bor. p. 44. no. 149 [1]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 235 [2]; Saunders, Cat. Birds Brit. Mus. xxv. p. 260 [3]; Oates, Cat. Eggs Brit. Mus. i. p. 215 [4]; Allen, Auk, xix. p. 283 [5].

Larus smithsonianus, Coues, Pr. Philad. Acad. 1862, p. 296 [6].

Larus argentatus smithsonianus, Coues, Key N. Amer. Birds, p. 312 [7]; Stone, Pr. Acad. Phil. 1890, p. 202 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 19 [9]; Nelson, N. Amer. Fauna, no. 14, p. 23 [10].

Supra pallide margaritaceo-cinereus; tectricibus alarum majoribus, secundariis et scapularibus late albo terminatis, fasciam transalarem conspicuam exhibentibus; primariis nigris, plus minusve interne griseo notatis, omnibus albo terminatis, internis autem plerumque pallide griseis, subterminaliter nigris; pileo colloque undique, uropygio et supracaudalibus, cauda tota et corpore subtus pure albis; collo postico pallide brunneo striato: rostro flavo, ad angulum genydis rubro; pedibus pallide carneis (in exuvie flavidis); iride straminea; annulo ophthalmico albo vel pallide flavicante. Long. tota circa 24·0, alæ 17·0, caudæ 6·7, culm. 2·35, tarsi 2·45.

♀ haud a mari differt. Long. tota circa 23·0, alæ 17·4. (Descr. maris et feminæ hiem. ex Corpus Christi. Mus. nostr.)

Ptil. æstiv. pileo colloque postico pure albis, minime brunneo striatis.

Juv. Grisescenti-brunneus, saturatiore brunneo marmoratus vel maculatus; primariis nigris, vix intus grisescentibus; secundariis brunneis, albido marmoratis; cauda brunnea, basin versus albido vermiculata; pileo cum collo et facie laterali et præpectore albis brunneo striolatis vel maculatis; corpore reliquo subtus pallide grisescenti-brunneo. (Descr. feminæ junioris ex Ventura, California. Mus. nostr.)

Hab. North America [3] generally, breeding from Maine, Northern New York, the Great Lakes, and Minnesota northwards, south in winter to Lower California [9].—Mexico, eastern coast (*Berlandier* [2]), off Progreso, Yucatan (*Stone & Baker* [8]), western coast of Mexico [3], Isabel I., off San Blas, Tres Marias Is. (*Nelson* [10]).—West Indies [3].—Arctic and Temperate Europe [3].

The Herring-Gull of North America is by some authors separated from the European *L. argentatus*, under the name of *L. smithsonianus*. It has been recognized as distinct by the Committee of the American Ornithologists' Union [9]; but recently Professor J. A. Allen has shown conclusively that the Herring-Gulls of the Old and New Worlds are identical [5], thus confirming the opinion of Messrs. Baird, Brewer, and Ridgway in America [2], and Mr. Howard Saunders in this country [3].

L. argentatus breeds in the arctic and subarctic regions of North America, and on the inland lakes as far south as 40° N. on the Atlantic coast [3]. In Central America it is a winter visitant and has been seldom recorded. Mr. Nelson procured an immature

bird on San Juanito Island as late as the 22nd of May, and saw others along the shores of the Tres Marias and at Isabel Island, but no adult individuals were noticed [10].

On the islands of the Bay of Fundy, Brewer found it nesting on the ground, on cliffs, and in trees, in which they had recently taken to breed. He says that these arboreal nests were cleverly constructed, and could scarcely be imagined to have been the work of a Gull.

The eggs vary from pearly-white, pale drab, or greyish-green, to a brownish clay-colour, the markings being usually of a violet-grey, blended with the more conspicuous blotches of deep sepia-brown [2].

6. Larus delawarensis.

Larus delawarensis, Ord, in Guthrie's Geogr. 2nd Amer. ed. ii. p. 319 [1]; Dugès, La Nat. i. p. 142 [2]; Lawr. Mem. Bost. Soc. N. H. ii. p. 317 [3]; Bull. U. S. Nat. Mus. no. 4, p. 51 [4]; Sumichr. La Nat. v. p. 234 [5]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 244 [6]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 19 [7]; Saunders, Cat. Birds Brit. Mus. xxv. p. 273 [8]; Oates, Cat. Eggs Brit. Mus. i. p. 217, t. 17. fig. 5 [9].

Larus zonorhynchus, a. mexicanus, Bp. Consp. Av. ii. p. 224 [10].

L. argentato similis, sed multo minor, primario secundo intus macula alba ante fasciam nigram subterminalem posita ornato: rostro virescenti-flavo, fascia nigra subterminali, apice flavo; rictu et annulo periophthalmico aurantiaco-rubris vel miniatis; pedibus virescenti-flavis; iride pallide flava. Long. tota circa 19·0, alæ 14·3, caudæ 5·6, culm. 1·75, tarsi 2·1. (Descr. maris adulti ex Milford, Conn. Mus. nostr.)

♀ mari similis, vix minor.

Ad. ptil. hiem. præcedenti similis, sed pileo et collo postico brunnescenti-griseo striolatis.

Juv. Brunneus, plumis fulvescente marginatis et subterminaliter brunneis vel nigricantibus; cauda grisescenti-alba, albo terminata, fascia lata subterminali nigra; primariis nigris, intus graduatim grisescentibus, albo vix terminatis, macula subterminali alba nulla: subtus pure albus; præpectore et corporis lateribus brunneo maculatis vel fasciatis. (Descr. avis jun. ex Godbout, Canada. Mus. nostr.)

Hab. North America generally [7], not breeding southward of Nova Scotia on the east or Utah on the west [8].—Mexico, both coasts [8], Guaymas (*Mathew* [8]), Mazatlan (*Grayson* [3]), Presidio (*Forrer* [8]), Guadalajara (*Dugès* [2]), Santa Ana near Guadalajara (*Lloyd* [8]), Gulf of Tehuantepec (*Sumichrast* [4 5]).—Bermudas [8]; Cuba, occasionally [8].

L. delawarensis, like many other members of the genus *Larus*, is without a black hood in the breeding-season. It has a pale grey back like *L. argentatus*, but is a much smaller bird, and has a conspicuous white spot near the end of the second quill-feather. From its nearest ally, *L. californicus*, it differs in having a well-defined black zone on the bill [8].

It is chiefly an inland species during the breeding-season in North America, frequenting lakes and marshes [8]. In Central America *L. delawarensis* is a winter visitant, and has been recorded chiefly from Western Mexico. Grayson says that it was common at Mazatlan during the winter months only [3]; Sumichrast, too, noticed it near Tehuantepec in February and March [4].

In the interior of North America this species breeds in many places in large numbers. It feeds on fish and also on locusts, catching the latter in the air.

Two eggs in the British Museum are very different from each other. One is of a regular oval form and has an olive-buff ground, sparingly marked, except at the larger end, where there are huge confluent blotches forming an irregular zone, with spots and specks of deep chocolate-brown; the underlying pale purple markings are few and inconspicuous. The second specimen is a pointed oval and has a light buff ground, boldly marked all over with spots and blotches of blackish-brown. The underlying markings on this egg are numerous, large, and conspicuous [9].

7. Larus californicus.

Larus californicus, Lawr. Ann. Lyc. N. Y. vi. p. 79 [1]; Bull. U. S. Nat. Mus. no. 4, p. 51 [2]; Sumichr. La Nat. v. p. 234 [3]; Herrera, La Nat. (2) i. pp. 188 [4], 329 [5]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 242 [6]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179 [7]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 19 [8]; Saunders, Cat. Birds Brit. Mus. xxv. p. 276 [9]; Oates, Cat. Eggs Brit. Mus. i. p. 217, t. 18. fig. 2 [10].

L. delawarensi similis, sed major, interscapulio saturatiore schistaceo; scapularibus et secundariis latius albo terminatis, albedine primariorum extimorum latius extensa: rostro flavo, macula vel fascia subterminali sæpius obsoleta, macula anteapicali intense coccinea; pedibus virescentibus; annulo periophthalmico miniato; iride corylina. Long. tota circa 18·5, alæ 15·2, caudæ 5·9, culm. 1·9, tarsi 2·3.

♀ *ad.* mari similis, sed minor. Long. tota circa 18·0, alæ 15·2. (Descr. maris et feminæ ex Ventura, California. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed pileo et collo summo grisescenti-brunneo striolatis: rostro grisescenti-albo, apice flavicanti-albo, nigro subterminaliter vittato; pedibus sordide virescenti-albis; iride corylina.

Hab. Western North America, chiefly in the interior, from Alaska southwards [8], once as far east as Kansas [9]. — W. Mexico [6], Valley of Mexico (*Herrera* [4 5]), Vera Cruz, Alvarado (*Ferrari-Perez* [7]), Gulf of Tehuantepec on the coasts, San Mateo (*Sumichrast* [2 3]).

The present species is larger and darker than *L. delawarensis*, with a mantle of deep slaty-grey; it is further distinguished by having the zone on the bill ill-defined or altogether absent. *L. californicus* breeds chiefly on the lakes and rivers from the Lower Anderson River to Utah, and winters on the Pacific coast of Central America [9]. It also visits the interior, having been noted by Herrera as occasional in the Valley of Mexico [5], and Prof. Ferrari-Perez has recorded a specimen from the State of Vera Cruz [7]. Sumichrast met with the species on the coast of the Gulf of Tehuantepec only [2 3].

The Californian Gull breeds in immense numbers on some of the lakes of North America, and Mr. Ridgway found an area of several acres on the main island of Pyramid Lake thickly crowded with the nests. These were mere heaps of dirt and gravel, mingled with rubbish of sticks, bones, and feathers, raised a few inches above the surface, and with a slight depression on the top. By far the larger number were

placed upon rocks, but a few were on the tops of stunted sage or on greasewood bushes[6]. The eggs are very similar to those of the European Lesser Black-backed Gull (*L. fuscus*[10]).

Order TUBINARES.

The Petrels form a well-defined group of sea-birds, placed by authors variously in proximity to the Storks, Penguins, Gulls, &c. Whatever characters the Petrels possess in common with any of the above-named birds, the fact remains that they are not really closely allied to any of them, but form a group by themselves, the peculiar position of the nostrils, which are tubular with an anterior opening, sufficiently distinguishing them. The bill shows several discontinuous areas, consisting of horny plates separated by deep grooves.

The Petrels are practically cosmopolitan in range, being found very far to the north, and also occurring nearly as far south as man has yet penetrated. They include species no larger than a Swallow, as well as Albatrosses, with a spread of wing greater than that of any other bird. Altogether about 110 species are known. These birds being ocean-wanderers, we also include in our enumeration such as have been recorded from the Revillagigedo and other islands off the coast of Mexico and Central America.

Four distinct families of Tubinares were recognized by Salvin in the 'Catalogue of Birds,' viz. the true Petrels (Procellariidæ), the Shearwaters (Puffinidæ), the Diving Petrels (Pelecanoididæ), and the Albatrosses (Diomedeidæ). Of these the Pelecanoididæ alone do not come within the scope of the present work.

Fam. PROCELLARIIDÆ.

In this family the nostrils are united externally above the culmen; the margin of the sternum is even; no pterygoid processes are present; the manubrium of the furcula is long; the coracoids are long, comparatively narrow across the base and slightly divergent; the second primary is the longest. (*Cf.* Salvin, Cat. Birds Brit. Mus. xxv. p. 342.)

The Procellariidæ include two subfamilies—the Procellariinæ and the Oceanitinæ.

Subfam. *PROCELLARIINÆ.*

This subfamily contains the birds usually called "Storm"-Petrels, most of which are scarcely larger than Swallows. Salvin has enumerated their characters as follows (Cat. Birds, xxv. p. 343):—"Leg-bones shorter than the wing-bones; tarsus never twice as long as the femur; basal phalanx of the middle toe shorter than the next two joints; keel of the sternum entirely ossified; tarsi covered in front with hexagonal scutes; claws sharp and compressed; outer toe shorter than the middle toe; secondaries at least thirteen in number."

Three genera of this subfamily are included within our limits—*Procellaria*, *Halocyptena*, and *Oceanodroma*. They are inhabitants of the Atlantic and Pacific Oceans, chiefly north of the Equator, with the exception of *Halocyptena*, which is confined to the Eastern Pacific, from the Galapagos Islands to the coast of Central America.

PROCELLARIA.

Procellaria, Linn. Syst. Nat. i. p. 212 (1766); Coues, Proc. Acad. Philad. 1864, p. 79; Salvin, Cat. Birds Brit. Mus. xxv. p. 343 (1896).

The type of the genus *Procellaria* is the well-known "Storm-Petrel," or "Mother Carey's Chicken," which is widely distributed throughout the Atlantic Ocean, breeding north of the Equator. It is distinguished from *Oceanodroma*, of which Leach's Petrel (*O. leucorrhoa*) is the type, by its longer tarsus, which exceeds the length of the middle toe and claw, while the tail has no distinct fork.

Only two species are recognized, the common *P. pelagica* and *P. tethys*, with the latter of which we are alone concerned.

1. Procellaria tethys.

Thalassidroma tethys, Bp. J. f. Orn. 1853, p. 47 [1].

Procellaria tethys, Towns. Proc. U. S. Nat. Mus. xiii. p. 142 [2]; Salv. Cat. Birds Brit Mus. xxv. p. 346 [3]; Rothsch. & Hart. Nov. Zool. vi. p. 199 [4]; ix. p. 416 [5].

Fuliginoso-brunnea, vix schistaceo adumbrata; uropygio et supracaudalibus pure albis; alis caudaque nigris, tectricibus majoribus omnibus et secundariis nonnullis intimis extus clarius brunneis, plagam alarem formantibus: subtus fuliginoso-brunnea, subalaribus medianis et majoribus vix pallidioribus, chocolatinis; subcaudalibus lateralibus extus albis: rostro et pedibus nigris; iride saturate brunnea. Long. tota circa 6·0, alæ 5·3, caudæ 2·25, culm. 0·5, tarsi 0·85. (Descr. maris adulti ex Culpepper I. Mus. Brit.)

♀ *ad.* mari similis. Long. tota circa 5·8, alæ 5·2. (Descr. feminæ adultæ ex Wenman I. Mus. Brit.)

Hab. West Coast of Central America [3].—Galapagos Is. [1 4 5].

This small Petrel probably occurs on the west coast of Central America, as stated by Salvin [3], though we do not know what evidence he had for this statement.

Messrs. Rothschild and Hartert say that *P. tethys* was found during the Webster-Harris expedition to the Galapagos Archipelago in the seas round the islands of Wenman, Culpepper, Albemarle, and Tower [4]; and more recently Mr. Beck has procured specimens in the neighbourhood of Bindloe, North Albemarle, and at sea in 1° N. lat., 39° W. long. [5] It was far more abundant in the northern part of the archipelago than in the south, and was generally met with far out at sea [4]. Mr. C. H. Townsend found examples of this Petrel in lat. 40° 22′ N., long. 82° 32′ W., and about 400 to 600 miles east of the Galapagos [2].

The species will doubtless be found to breed on some of the last-named islands.

HALOCYPTENA.

Halocyptena, Coues, Proc. Acad. Philad. 1864, p. 78; Salvin, Cat. Birds Brit. Mus. xxv. p. 346 (1896).

The single member of this genus is a small brown bird, very similar to the Storm-Petrels in appearance, but differing in form. It may at once be distinguished by its cuneate or wedge-shaped tail. Like *Procellaria*, the present genus has the tarsus longer than the middle toe and claw, but it has also a very small bill, with prominent nasals which give the culmen a humped appearance.

Only one species is known, which inhabits the seas and islands on the west coast of America from the Gulf of California to the Bay of Panama.

1. Halocyptena microsoma.

Halocyptena microsoma, Coues, Proc. Acad. Philad. 1864, pp. 79[1], 90[2]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 402[3]; Towns. Proc. U. S. Nat. Mus. xiii. p. 141[4]; Salv. Cat. Birds Brit. Mus. xxv. p. 346[5]; Oates, Cat. Eggs Brit. Mus. i. p. 147, t. 11. fig. 1[6].

Fuliginoso-nigra, vix schistaceo adumbrata; tectricibus primariorum, ala spuria, remigibus et rectricibus nigerrimis; tectricibus majoribus pallidioribus, brunnescentioribus, vix conspicuis; corpore toto subtus magis chocolatino-brunneo; subalaribus pectore concoloribus, vix brunnescentioribus; tectricibus marginalibus nigris: rostro et pedibus nigris. Long. tota circa 5·5, alæ 4·75, caudæ 2·0, culm. 0·4, tarsi 0·9, dig. med. cum ungue 0·7. (Descr. feminæ adultæ ex Mazatlan. Mus. nostr.)

Hab. San Benito Is. (*Anthony*[6]); Lower California, San José del Cabo (*Xantus*[1 2 3]). —Mexico, Mazatlan (*Forrer*[5]); Bay of Panama (*Townsend*[4]).

In general appearance this species resembles *Procellaria tethys*, but is distinguished by its wedge-shaped tail. It would appear to vary somewhat in size, as the female from Mazatlan has the wing only 4·75 inches in length (Salvin makes it but 4·65). A male from San Benito Island has the wing 4·85 inches, and a female from the same place 5·05. The Mazatlan bird is in somewhat worn condition, and does not show the browner greater upper and lower wing-coverts, as do the fresher plumaged birds from San Benito.

H. microsoma was first discovered by the late John Xantus at San José del Cabo, in Lower California, and it has since been met with on some of the adjacent islands off the western coast. Mr. Forrer procured a single specimen near Mazatlan[5], and in March 1888 a bird of this species flew on board the 'Albatros' in the Bay of Panama.

Eggs collected by Mr. A. W. Anthony on the San Benito Islands are in our own collection and in that of the British Museum. They are of an elliptical or broad-oval shape, white, with a very few minute rufous dots—so small that they might easily escape notice—scattered all over the shell.

OCEANODROMA.

Oceanodroma, Reichenb. Av. Syst. Nat. p. iv (1852); Salvin, Cat. Birds Brit. Mus. xxv. p. 347 (1896).

In *Oceanodroma* the tarsus is somewhat shorter than in the preceding genera, not exceeding the middle toe and claw, and the tail is forked. From the last-named character the species of this genus are often spoken of as the "Fork-tailed" Petrels.

They are mostly sooty-black in colour, but, as a rule, somewhat larger than their allies.

The species of *Oceanodroma* are found in the subarctic zones of both hemispheres, but several of the dusky forms are met with in tropical seas, and two have been recorded from off the coast of Western Mexico. Besides those enumerated below, it is quite possible that *O. castro* (Harcourt, = *O. cryptoleucura*, Ridgway), and *O. homochroa*, Coues, may also occur within our limits.

1. Oceanodroma kædingi.

Oceanodroma kædingi, Anthony, Auk, xv. pp. 37 [1], 314 [2], 316 [3], 317 [4]; Rothsch. & Hart. Nov. Zool. ix. p. 415 [5].

Fuliginoso-nigra: subtus paullo brunnescentior, capite colloque magis plumbescentibus; tectricibus alarum medianis et majoribus pallide fuliginoso-brunneis, plagam alarem indistinctam formantibus, supracaudalibus longioribus albis, rhachidibus nigris, nonnullis brunneo fimbriatis. Long. tota circa 6·5, alæ 5·5, caudæ 2·45, culm. 0·55, tarsi 0·8, dig. medio cum ungue 0·9. (Descr. feminæ adultæ ex mari, 13° N., 103° W. Mus. Rothschild.)

Hab. Revillagigedo Is., San Benedicte, Socorro I., Clarion I. (*Anthony* [1–4]); at Sea, lat. 13° N., long. 103° W. (*Beck* [5]).

O. kædingi, described from the Revillagigedo Islands [1], extends further south, as Messrs. Rothschild and Hartert record the capture of three specimens by Mr. Beck at sea, in lat. 13° N. and long. 103° W.[4]

Mr. Anthony rightly compares *O. kædingi* with Leach's Petrel (*O. leucorrhoa*), but points out that it is smaller and has a much less deeply forked tail. It belongs, therefore, to the section in which the upper tail-coverts are more or less white (*cf.* Salvin, Cat. Birds Brit. Mus. xxv. p. 347), but there appears to be a good deal of variation in this respect. A few specimens had these coverts black, with whitish patches on the sides, while one had them totally black, but was otherwise similar [5]. A parallel variation is to be noticed in *O. socorroensis*.

In his paper on the birds of the Revillagigedo group ('Auk,' xv. pp. 311–318), Mr. Anthony says (*l. c.* p. 314) that "A number [of *O. kædingi*] were seen at sea off the island of San Benedicte as late as June 1. We found no evidence of the nesting of small Petrels on any of the islands of this group. It is possibly accounted for by the

presence of vast numbers of large land-crabs that inhabit burrows all over the islands and would very likely destroy eggs and young of such a bird as *Oceanodroma*" [2].

Another species which has white upper tail-coverts, and probably occurs within Central-American waters, is *O. macrodactyla* of Bryant, of Guadalupe Island. This is larger than *O. kædingi*, with broad black tips to the white upper tail-coverts, and exhibits on the wing a very conspicuous light brown patch, consisting of the median and greater wing-coverts. Long. tota circa 8·3, alæ 6·6, caudæ 3·5, culm. 0·7, tarsi 0·9.

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2. Oceanodroma melania.

Procellaria melania, Bp. Compt. Rend. xxxviii. p. 662 [1].

Thalassidroma melania, Bp. Consp. Av. ii. p. 196 [2].

Cymochorea melania, Coues, Pr. Acad. Philad. 1864, p. 76 [3]; Ridgw. Pr. U. S. Nat. Mus. v. p. 534, note [4]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 411 [5].

Oceanodroma melania, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 37 [6]; Salv. Cat. Birds Brit. Mus. xxv. p. 353 [7]; Nelson, N. Amer. Fauna, no. 14, p. 28 [8]; Oates, Cat. Eggs Brit. Mus. i. p. 149, t. 11. fig. 3 [9].

Oceanodroma townsendi, Ridgw. Pr. U. S. Nat. Mus. xvi. p. 687 [10].

Fuliginoso-nigra, schistaceo distincte adumbrata; remigibus et rectricibus nigerrimis; tectricibus medianis et majoribus apicem versus pallide brunnescentibus, his marginaliter graduatim albicanti-brunneis; secundariis nonnullis intimis extus et ad apicem pallide brunnescentibus; corpore subtus paullo brunnescentiore, gutture colloque vix schistaceo adumbratis; subalaribus majoribus vix rufescenti-brunneo lavatis. Long. tota circa 8·4, alæ 6·8, caudæ 3·3, culm. 0·5, tarsi 1·2.

♀ mari similis. Long. tota circa 8·5, alæ 6·8. (Descr. maris et feminæ ex San Benito Is. Mus. Brit.)

Hab. South Pacific Ocean, north to Southern California [6]; Lower California, Cape San Lucas (*Xantus* [3 5]), San Benito Is. (*Anthony* [9]).—Coasts of Western Mexico [2], Acapulco (*Townsend* [10]), off San Blas to the Tres Marias (*Nelson* [8]).

The type of this species was redescribed by Salvin in the 'Catalogue of Birds.' *O. melania* is one of the larger species of Black Petrel, and the specimens in the Rothschild Museum have wings from 6·7 to 7·25 inches in expanse.

Mr. Nelson writes:—"Common between Isabel and Tres Marias. Black Petrels were by far the most numerous of the Petrels seen, and outnumbered all the others by two to one. Three, possibly four, other species were seen on the way to and from the islands, but this was the only one secured. They circled about in all directions, sometimes coming very near, but nothing peculiar in their habits was observed. They were quick to see little fragments of fat thrown overboard while we were skinning other waterfowl, and when the morsels were small enough ate them greedily" [8].

Eggs from San Benito in our own collection and in the British Museum, secured by Mr. Anthony, are broad and oval, closely approaching the elliptical form; they are smooth and without any gloss, plain white, and have no traces of markings [9].

3. Oceanodroma socorroensis.

Oceanodroma socorroensis, Towns. Pr. U. S. Nat. Mus. xiii. p. 134[1]; Salv. Cat. Birds Brit. Mus. xxv. p. 352[2]; Anthony, Auk, 1895, p. 387[3]; 1898, p. 38[4]; Oates, Cat. Eggs Brit. Mus. i. p. 149, t. 11. fig. 6[5].

Oceanodroma townsendi (nec Ridgw.), Anthony, Auk, 1894, p. 321[6].

O. melaniæ similis, sed minor, plaga brunnea alari paullo magis extensa, tectricibus medianis anticis quoque brunnescentibus; supracaudalibus lateralibus sæpius cinerascentibus, interdum albidis; subalaribus rufescenti-brunneis, marginalibus nigerrimis: rostro et pedibus nigris. Long. tota circa 7·8, alæ 5·9, caudæ 2·95, culm. 0·61, tarsi 0·8.

♀ mari similis. Long. tota 7·5, alæ 5·85. (Descr. maris et feminæ ex San Benito Is. Mus. Brit.)

Hab. California, as far north as the Santa Barbara Channel, San Diego[3], San Benito Is. (*Anthony*[5]); Revillagigedo Is., Socorro I. (*Townsend*[1 2]).

This species is described as similar to *O. homochroa*, but with the wings longer, and the tail shorter and less deeply forked, the tarsus and toes shorter, the sides of the rump whitish, and with no white on the under surface of the wings. The dimensions are given as follows:—Wing 5·50, tail 2·75 (forked for 0·50), culmen 0·55, tarsi and toes 0·85[1].

Only one specimen was secured and a few others seen, but Mr. Townsend found the hills at the western end of Socorro Island literally honeycombed with the burrows of some creature which he believed to be this Petrel. The most diligent search did not reveal any small mammal on the island, and lizards could not have excavated these burrows[1].

This is a smaller bird than *O. melania*, which otherwise it closely resembles. The light patches of whitish or grey appear to be by no means a constant character, as Mr. Anthony has already remarked. The type-specimen has whitish patches on the sides of the rump (*i. e.* the lateral upper tail-coverts), but in over one hundred skins he has found only about 3 per cent. so marked. A few were nearly as white on the rump as *O. leucorrhoa*; but the largest part of the series, fully 95 per cent., had sooty-black coverts above and below. Two or more species, he adds, might be made, but unfortunately the light-rumped birds are found in the same burrows with the dark ones.

Specimens of *O. socorroensis* have also been obtained off San Diego, California, so that the species is now included in the avifauna of the United States[3]. Mr. Anthony has also found it nesting on the San Benito Islands, between Guadalupe I. and the Cerros Is., and has presented specimens of both birds and eggs to the British Museum. He says that it is found on the open sea, in small companies of not more than three together[6].

The eggs are elliptical in shape, white, marked with pink specks and dots at the broader end. In one egg these form a cap, in the other an indistinct zone, a few specks being also scattered over the shell[5].

O. homochroa, Coues, which may also occur within our limits, is a small Petrel and is more sooty and less chocolate-brown underneath than the foregoing species, and it has a decided ashy shade on the head and fore part of the body, and the upper tail-coverts have a cinereous tinge. The lower under wing-coverts are also not so white. Long. tota circa 6·8, alæ 5·65, caudæ 3·2, culm. 0·6, tarsi 0·85. (Descr. feminæ adultæ ex Farallon Is. Mus. Rothschild.)

Fam. PUFFINIDÆ.

For this family Salvin enumerates the characters as follows:—"Nostrils united externally, or nearly so, above the culmen; margin of the sternum uneven; distinct pterygoid processes; manubrium of furcula very short; coracoids short, wide at the base and divergent; first primary the longest, or not shorter than the second."

The Puffinidæ, which are entirely oceanic in their distribution, are divided into two subfamilies, the Shearwaters (Puffininæ) and the Fulmars (Fulmarinæ). None of the latter have, as yet, been found in Central America.

Subfam. *PUFFININÆ*.

The members of this subfamily are distinguished by the absence of lamellæ on the sides of the palate, whereas all the Fulmarinæ have more or less well-developed lamellæ. Eight genera of Puffininæ are recognized by Salvin in the 'Catalogue of Birds.'

PUFFINUS.

Puffinus, Brisson, Orn. vi. p. 131 (1760); Salvin, Cat. Birds Brit. Mus. xxv. p. 368 (1896).

The true Shearwaters of the genus *Puffinus* have the tarsus distinctly compressed, with the anterior edge sharp. The nasal tube is low, both nostrils being visible from above, directed forwards and slightly upwards. The tail-feathers are twelve in number.

The distribution of the genus is world-wide, and about twenty species are recognized.

In addition to the three here enumerated, two others, *P. opisthomelas* and *P. creatopus*, may visit the islands off the Mexican or Central-American coast, but there is no direct evidence of either of them having been seen within these limits.

1. Puffinus cuneatus.

Puffinus cuneatus, Salv. Ibis, 1888, p. 353[1]; Cat. Birds Brit. Mus. xxv. p. 371[2]; Seebohm, Ibis, 1891, p. 191[3]; Anthony, Auk, xv. pp. 39[4], 316[5]; xvii. pp. 247–252, t. 8[6]; Nelson, N. Amer. Fauna, no. 14, p. 27[7]; Oates, Cat. Eggs Brit. Mus. i. p. 152[8].

Puffinus knudseni, Stejneger, Pr. U. S. Nat. Mus. xi. p. 93[9].

Brunneus, alis caudaque nigricantibus, hac longa cuneata; pileo vix saturatiore brunneo, loris et facie laterali paullo cinerascentioribus; genis albis cinereo marmoratis; corpore toto subtus albo, colli lateribus brunneis dorso concoloribus, corporis lateribus et axillaribus cinerascenti-brunneis; subcaudalibus

brunneis; subalaribus albis, margine alari brunneo: rostro saturate corneo; pedibus flavicantibus, digito externo saturatiore. Long. tota circa 17·0, alæ 12·0, caudæ 5·6, culm. 1·45, tarsi 1·85, dig. med. cum ungue 2·15.

♀ a mari vix distinguendus. Long. tota circa 17·0, alæ 11·5. (Descr. maris et feminæ ex San Benedicto I. Mus. nostr.)

Forma obscurior. Omnino fuliginoso-brunneus, corpore subtus vix cinerascentiore. (Descr. spec. ex San Benedicto I. Mus. nostr.)

Hab. Lower California, off Cape San Lucas (*Anthony*[6]); Revillagigedo Is., San Benedicto I., Socorro I. (*Anthony*[4 5 6]).—Mexico, Maria Madre I. in the Tres Marias group (*Nelson & Goldman*[7]).—Krusenstern I., N. Pacific[1]; Volcano Is.[3]; Hawaiian Is.[9].

This Shearwater was discovered on Krusenstern Island by Mr. H. J. Snow[1], and was afterwards met with by Holst on Sulphur Island, in the Volcano group[3]. Our principal acquaintance with the species rests upon the researches of Mr. A. W. Anthony, who found it in numbers on the Revillagigedo Islands and off the coast of Lower California[3–6]. Mr. Nelson also observed it near the Tres Marias[7].

The species is dimorphic and has a white-breasted as well as a sooty phase. The latter has been described by Dr. Stejneger as *P. knudseni*, from the Hawaiian Islands[9]; but Mr. Anthony found both forms on San Benedicto, and says that in a series of seventy-five examples every kind of intergradation was noticeable, from specimens with pure white underparts, including the under wing-coverts, to those in grey or sooty-brown plumage. These variations are plainly perceptible in the series in our collection, and it is noteworthy that Mr. Anthony records having taken examples of both phases out of the same hole.

The same observer states that in the summer of 1897 he noticed this species about Socorro Island, but that it was not common there. None were seen at Clarion Island or west of Rocca Partida on this occasion, but subsequently he met with it at sea near the last-mentioned island. Both phases of plumage occurred, the sooty birds outnumbering the light-bellied ones by about two to one. It was not breeding to any extent at the time of his visit, and only a single egg was obtained.

Mr. Nelson saw a considerable number of these Shearwaters at sea between Isabel Island and the Tres Marias, and he judged that they must be rather common in these waters. He noticed several among a flock of Sooty Terns which were following a school of porpoises; but, as a rule, this *Puffinus* is found singly, skimming over the sea, making widely sweeping circuits, and pausing occasionally to pick up food[7].

Mr. Anthony has given a most interesting account of its habits, the bird having been found in abundance in May and June about Cape San Lucas, and between that point and the Revillagigedo Islands. The southern end of San Benedicto Island was honeycombed with their burrows. He considers that the nesting-season of *P. cuneatus* is at least two months later than that of either *P. opisthomelas* or *P. auricularis*, which both deposit their eggs during the early part of March. A rude attempt at a nest was

made of green grass and other vegetation, and on a second exploration of the tunnels Mr. Anthony found that a further extension of one or two feet had been made by the birds previously disturbed by him, and that the nest had been transferred to the newly excavated burrows. He describes the flight of this Shearwater as much more airy and graceful than that of any other species known to him [6].

The eggs are white and the shell is smooth [8].

2. Puffinus auricularis.

Puffinus auricularis, Townsend, Pr. U. S. Nat. Mus. xiii. p. 133 [1]; Salvin, Cat. Birds Brit. Mus. xxv. p. 380 [2]; Anthony, Auk, xv. pp. 313 [3], 316 [4], 317 [5]; xvii. p. 249 [6].

P. opisthomelani * similis, sed saturatior; hypochondriis imis nigricantibus; axillaribus albis, apicem versus nigricantibus; corpore subtus toto pure albo; regione suboculari et gutturis lateribus nigro maculatis. Long. tota circa 13·5, alæ 9·2, caudæ 3·15, culm. 1·35, tarsi 1·7. (Descr. maris adulti ex Clarion I. Mus. Rothschild.)

Hab. Lower California, Cape San Lucas [6]; Revillagigedo Is., Clarion I. [1 5 6], San Benedicto I. [3 6], Socorro I. [4].

This species was discovered on Clarion Island by Mr. C. H. Townsend in March 1889 [1]. He describes it as not unlike *P. opisthomelas*, but with a smaller bill and feet. The colours of the upper parts are darker, nearly black, with the black of the head extending below the eye to the angle of the mouth, and that of the wing well over the edge of the latter to the under surface; the sides of the neck mottled by the gradual blending of white and black.

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* Puffinus opisthomelas.

Puffinus opisthomelas, Coues, Pr. Acad. Philad. 1864, pp. 139 [1], 144 [2]; Salvin, Cat. Birds Brit. Mus. xxv. p. 380 [3]; Anthony, Auk, xvii. p. 247 [4]; Oates, Cat. Eggs Brit. Mus. i. p. 154 [5].

Puffinus gavia (nec Forster), Ridgway, Pr. U. S. Nat. Mus. iii. pp. 12 [6], 230 [7]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 389 [8]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 32 [9].

♀. Supra fuliginoso-niger; dorso postico et uropygio, supracaudalibus cum alis caudaque paullulum nigricantioribus; corpore subtus pure albo; loris, facie laterali et regione parotica fuliginosis, vix albido marmoratis; genis et colli præpectorisque lateribus cinereo irroratis, plumis singulis cinereo marginatis; pectoris summi lateribus et hypochondriis imis brunneis; subcaudalibus fuliginoso-brunneis, imis ad basin albis; subalaribus albis, tectricibus primariorum extus brunneis; axillaribus albis, ad apicem fuliginoso-brunneis, albo terminatim fasciatis; remigibus infra fuliginosis, intus paullo cinerascentibus; culmine et regione nasali nigris: rostro laterali flavescente vel rufescenti-brunneo, ungue cærulescenti-albo; pedibus et palmis flavicanti-carneis, digito externo nigro; tarso externo partim nigro. Long. tota circa 14·0, alæ 8·8, caudæ 3·2, culm. 1·45, tarsi 1·75. (Descr. feminæ adultæ ex Playa Maria Point. Mus. nostr.)

♂ haud a femina distinguendus, sed major. Long. tota circa 15·5, alæ 9·5. (Descr. maris ex Santa Cruz, California. Mus. nostr.)

Hab. Coast of Central and Lower California [3 4 9], probably extending north to the Columbia River [4], Guadalupe I., San Benito I., and Natividad I. (*Anthony* [4]).

Mr. Anthony, who has given an interesting account of this species in the 'Auk' for 1900 [4], found it breeding on Guadalupe, and also on the San Benito Islands. He likewise met with this Shearwater in April, 1897, nesting

Two specimens from the same locality have been lent me by Mr. Rothschild, and these are very like the members of the *P. obscurus*-group, but larger than any of them.

Mr. Anthony noticed *P. auricularis* when crossing from Cape San Lucas to San Benedicto, and also on the island itself, and afterwards about Socorro, but found no evidence of its nesting in the last-named place [4].

On San Benedicto he procured many quite young birds in the last week of May [3], and also met with it breeding on Clarion Island, full-grown young being taken in the same month. The burrows were confined to the higher parts of San Benedicto, about 500 feet above the sea, amongst tangled grass, and were well scattered, seldom more than a dozen being seen together. They were not so long nor so deep as those of *P. opisthomelas* on Natividad, averaging about five feet in length. The colonies on Clarion Island were more extensive, each suitable patch of grass being well populated.

3. Puffinus auduboni.

Puffinus auduboni, Finsch, P. Z. S. 1872, p. 111 [1]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 386 [2]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 32 [3].

Puffinus obscurus auduboni, Rothsch. & Hartert, Nov. Zool. vi. p. 195 [4].

Puffinus obscurus (nec Gm.), Coues, Pr. Acad. Philad. 1864, pp. 137 [5], 144 [6]; Salvin, Cat. Birds Brit. Mus. xxv. p. 382 (part.) [7].

Fuliginoso-nigricans, vix cinereo adumbratus: subtus pure albus, hypochondriis imis brunneo irroratis, latius fuliginoso-nigro striatis, plumis nonnullis intus nigricantibus; subcaudalibus albis, longioribus brunneis; loris et facie laterali cum regione parotica et colli lateribus distincte cinereo lavatis; subalaribus albis,

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in thousands on Natividad, a small island lying about thirty-five miles south of the San Benito group. The burrows of these birds extended for about ten feet, seldom, if ever, straight, the nest being at the end, and rarely more than eighteen inches below the surface.

Eggs from Natividad have been presented by Mr. Anthony to the British Museum [5].

The following allied form has been recorded as occurring from "California to Chile," but there is no direct evidence of its having been found on the coast of Central America or on the adjacent islands.

Puffinus creatopus.

Puffinus creatopus, Coues, Proc. Acad. Nat. Sci. Philad. 1864, pp. 131 [1], 144 [2]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 383 [3]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 32 [4]; Salvin, Cat. Birds Brit. Mus. xxv. p. 376 [5].

P. opisthomelani similis, sed multo major, remigibus basin versus conspicue albis, gutture imo et præpectore medio pure albis, plumis minime cinereo fimbriatis, axillaribus quoque fere cinereis, albo marmoratis vel fasciatis, cauda magis cuneata distinguendus: rostro flavicante, apice corneo; pedibus flavis, extus saturatioribus. Long. tota circa 18·0, alæ 13·0, caudæ 4·3, culm. 1·75, tarsi 2·1. (Descr. maris adulti ex Monterey. Mus. Brit.)

Hab. Western Coast of America from California to Chile [5]; Juan Fernandez I. [5].

P. creatopus is similar to *P. opisthomelas*, but is very much larger, the wing exceeding twelve inches in length, and also differs in the other characters given above.

margine alari cinerascenti-brunneo marmorato; remigibus intus cinerascentibus; axillaribus albis, apicem versus cinereo irroratis. Long. tota circa 11·5, alæ 7·0, caudæ 3·0, culm. 1·15, tarsi 1·5. (Descr. avis adultæ ex Montserrat I. Mus. nostr.)

Hab. Coast of Eastern North America, nesting on the Bahamas [4]; Gulf of Mexico [5 6], Montserrat I. (*Sturge* [7]).

The question of the identity of the small Shearwaters (*Puffinus obscurus* and its allies) is admittedly a very difficult one, and in the 'Catalogue of Birds' Salvin recognized three species only—*P. obscurus*, *P. assimilis*, and *P. auricularis*, while Messrs. Rothschild and Hartert distinguish seven forms. It is not necessary in the present work to discuss the validity of the latter, and I must refer those interested in the subject to the elaborate paper above quoted [4].

The present species differs from all the foregoing in its small size.

We have not seen any specimens of *P. audubonì* from the Gulf of Mexico, whence Dr. Elliott Coues has recorded it.

Mr. Bonhote found this Shearwater extremely common on the Cays of Andros I., in the Bahamas, breeding in May.

PRIOCELLA.

Priocella, Hombr. & Jacq. C. R. xviii. p. 357 (1844); Salvin, Cat. Birds Brit. Mus. xxv. p. 393 (1896).

The genus *Priocella* has the same compressed tarsus as *Puffinus*, but the nasal tubes are placed higher in the bill, and are united in a single opening directed forwards.

One species only is known, inhabiting chiefly the southern oceans, but occasionally wandering northward into equatorial and temperate latitudes.

1. Priocella glacialoides.

Procellaria glacialoides, Smith, Ill. Zool. S. Afr., Aves, p. 51 [1].

Priocella glacialoides, Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 373 [2]; Salvin, Cat. Birds Brit. Mus. xxv. p. 393 [3]; Sharpe, Rep. Southern Cross Coll. p. 145 [4].

Fulmarus glacialoides, A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 31 [5].

Thalassœca glacialoides, Saunders, Antarctic Manual, p. 230 [6].

Supra margaritaceo-cinerea, colore *Larino*; uropygio et supracaudalibus vix pallidioribus; cauda pallide margaritaceo-cinerea, rectricibus externis intus albis; ala spuria, tectricibus primariorum et remigibus plerisque extus nigricantibus intus cinereis basin versus albis; primariorum pogonio interno pure albo, apicem versus nigricante; primariis interioribus extus cinereis, intus albis, ad apicem nigricantibus; secundariis intimis dorso concoloribus; pileo pallide margaritaceo-cinereo; fronte lata lorisque pure albis; regione parotica alba vix cinereo lavata; genis et corpore subtus toto pure albis; colli et corporis lateribus pallide cinereo lavatis; subcaudalibus, subalaribus et axillaribus pure albis; margine alari nigricante vel cinereo lavato; remigibus intus albis: rostro flavicante, apice et culminis parte mediana, naribus et maxilla basali, nigris; pedibus pallide carneis, palmis carneis, digito externo saturatiore; iride brunnea. Long. tota circa 16·0, alæ 12·0, caudæ 4·3, culm. 1·75, tarsi 1·8. (Descr. maris adulti ex Mazatlan. Mus. nostr.)

Hab. Mexico, Mazatlan [3].—Seas of the Southern Hemisphere [3], northward along the Pacific Coast of North America to Washington Territory [3 4].

This Petrel is easily recognized by its large size and silvery-grey plumage, resembling that of the Northern Fulmar (*Fulmarus gracilis*).

The species is found in the Cape seas and also in the Antarctic pack-ice, where Hanson procured several specimens which were swimming about in search of food. It is believed to breed in Kerguelen, but the eggs have not yet been obtained.

Fam. DIOMEDEIDÆ.

The characters for the determination of the Albatrosses as distinct from other Petrels are thus given by Salvin in the 'Catalogue of Birds':—Nostrils lateral, separated by the wide culmen, each in a separate horny sheath opening forwards; margin of the sternum uneven, the sternum itself short compared with its width; no pterygoid processes; manubrium of furcula very short; coracoids short, very wide at the base and widely divergent; first primary the longest.

The Albatrosses are distributed over the entire Southern Hemisphere, retiring to rocky islands to nest. In the Pacific they extend as far north as Japan and the Hawaiian Islands. Only three genera are known—*Diomedea*, *Thalassogeron*, and *Phœbetria*, and a single species of two of them has occurred within our limits.

DIOMEDEA.

Diomedea, Linn. Syst. Nat. i. p. 214 (1766); Salvin, Cat. Birds Brit. Mus. xxv. p. 440 (1896).

The typical Albatrosses have no such groove along the sides of the culmen as is found in the Sooty Albatross (*Phœbetria fuliginosa*), and the tail is short and rounded. The bill is, as it were, divided into sections or horny layers, and thus in *Diomedea* the base of the "culminicorn," or upper sheath, is wide, joining the proximal end of the dorsal edge of the "latericorn," or lateral plate of the culmen.

The species are nine in number, and are principally inhabitants of the Southern Hemisphere, though they are seen occasionally north of the Equator. Two species, *D. nigripes* and *D. albatrus*, are inhabitants of the Northern Pacific, and the former has been noticed near the Revillagigedo Islands.

1. Diomedea nigripes.

Diomedea nigripes, Audubon, Orn. Biogr. v. p. 327 [1]; Salv. Cat. Birds Brit. Mus. xxv. p. 445 [2]; Anthony, Auk, xv. p. 317 [3]; Oates, Cat. Eggs Brit. Mus. i. p. 163 [4].

Fuliginoso-brunnea, facie laterali et corpore subtus toto pallidioribus, magis cinerascentibus; pileo albicanti-brunneo variegato, plumis pallidius marginatis; regione anteoculari nigricante; fronte basali, loris, et genis anticis cinerascenti-albis, mento clariore cinereo; subalaribus et axillaribus saturate brunneis: rostro

saturate rufescenti-brunneo; pedibus nigris. Long. tota circa 30·0, alæ 19·7, caudæ 6·6, culm. 4·1 tarsi 3·6. (Descr. maris adulti ex Oceano Pacifico septentrionali. Coll. 'Challenger.')

Juv. adulto similis, sed supracaudalibus plerisque et subcaudalibus omnibus albis distinguenda. Long. tota circa 31·5, alæ 20·0. Descr. av. jun. ex lat. N. 33°, long. W. 119°. Mus. nostr.)

Hab. North Pacific Ocean [2], off Clarion Island, in the Revillagigedo group (*Anthony* [3]).

This species belongs to the smaller section of the genus *Diomedea*, in which the bill is more slender than in the Wandering Albatross (*D. exulans*) and its allies. It is distinguished by its sooty-brown abdomen, of the same colour as the interscapulary region and middle of the back.

D. nigripes breeds in the North Pacific Ocean, and wanders southward along the coasts of China and North America. Mr. Anthony says that the only example of the species observed by him to the south of Cape San Lazaro was seen at a short distance from Clarion Island.

The single egg in the Seebohm collection, from Sulphur Island, in the Bonin group, is described as "dull brownish white, without markings" [4].

THALASSOGERON.

Thalassogeron, Ridgway, in Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. pp. 345, 357 (1884); Salvin, Cat. Birds Brit. Mus. xxv. p. 449 (1896).

The Albatrosses of the genus *Thalassogeron* differ from the species of *Diomedea* in having the base of the culminicorn narrower, and divided from the latericorn by a membrane.

1. Thalassogeron culminatus.

Diomedea culminata, Gould, P. Z. S. 1843, p. 107 [1].

Thalassogeron culminatus, Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 358 [2]; A. O. U. Check-l. Birds N. Am. 2nd ed. p. 28 [3]; Salv. Cat. Birds Brit. Mus. xxv. p. 451 [4].

Supra fuliginoso-brunneus, pileo et collo pallide cineraceis, interscapulium versus saturate cinereum graduatim vergentibus; regione circumoculari fuscescenti-cinerea, antice vix nigricante; facie laterali albida, cinereo lavata; corpore toto subtus pure albo; uropygio et supracaudalibus albis; cauda cinerascenti-brunnea, rectricum rhachidibus albis; remigibus fuliginoso-brunneis, primariorum rhachidibus fere albis, secundariis intus albicantibus; subalaribus et axillaribus albis, margine alari lato fuliginoso-brunneo: rostro nigricanti-corneo, culmine flavicante, apice albido, genyde flavicante; pedibus flavis. Long. tota circa 32·0, alæ 19·5, caudæ 7·7, culm. 4·4, tarsi 3·3. (Descr. avis adultæ ex Kerguelen Land. Mus. Brit.)

Hab. Coast of Panama (*Bridges* [4]).—Southern, Indian, and South Pacific Oceans [1], visiting occasionally the temperate northern seas [4].

A specimen of this Albatross said to have been procured in the Bay of Panama by Mr. Bridges is in the collection of the British Museum. Though a southern species, it occasionally wanders far north and has occurred in the Gulf of St. Lawrence.

T. culminatus may be recognized by its yellow culminal ridge, the sides of the bill being black; the culminicorn is rounded posteriorly, and the lower edge of the mandible is yellow [4].

Order PYGOPODES.

For the characters of this order we cannot do better than quote the definitions given in vol. xxvi. of the 'Catalogue of Birds':—

"Skull holorhinal and schizognathous; nares pervious; vomer cleft posteriorly for about $\frac{1}{3}$ or $\frac{1}{2}$ its length; basipterygoid processes absent; lachrymal not extending downwards to join the quadrato-jugal bar; quadrate with an elongate orbital process; maxillo-palatine processes laminate, not rod-shaped; dentary suture of mandible more or less completely obliterated; angulare truncate posteriorly; furculum without a facet for articulation with the acro-coracoid; pre-ilia not rising up to meet in the middle line above the fused neural spines of the synsacrum; post-ilia much longer than the pre-ilia and vertically compressed; tibio-tarsus with the cnemial crest produced upward far beyond the articular surface of the femur; tarso-metatarsus laterally compressed; outer toe longest. Rhamphotheca simple. Nestling nidifugous."

The Order contains two Families—the Divers and the Grebes.

Fam. COLYMBIDÆ.

The Divers have the hallux on a level with the fore toes, the latter being united by a web; the tail is composed of eighteen or twenty short stiff feathers (*cf.* Grant, Cat. Birds Brit. Mus. xxvi. p. 485). The family consists of a single genus, *Colymbus*.

COLYMBUS.

Colymbus, Linn. Syst. Nat. i. p. 220 (1766); Grant, Cat. Birds Brit. Mus. xxvi. p. 486 (1898).

American ornithologists employ the name *Urinator* of Cuvier for *Colymbus* of Linnæus, 1766, holding that, in the 1758 edition, Linnæus used *Urinator* for the Grebes. We prefer, however, to adhere to the Stricklandian Code and to recognize the genera of the 1766 edition.

Five species of *Colymbus* are known, all of them breeding far north in both hemispheres, and migrating southward in winter.

1. Colymbus glacialis.

Le Grand Plongeon, Brisson, Orn. vi. p. 105, t. 10. fig. 1 [1].

Colymbus glacialis, Linn. Syst. Nat. i. p. 221 [2]; Grant, Cat. Birds Brit. Mus. xxvi. p. 493 [3].

Urinator immer (Brünn.), Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 446 [4].

Urinator imber (Gunn.), A. O. U. Check-l. N. Amer. Birds, p. 75 [5]; 2nd ed. p. 3 [6]; Herrera, La Nat. (2) i. pp. 188 [7], 330 [8].

Ptil. hiem. Supra nigricans, plumis grisescenti-schistaceo late marginatis, pileo et collo postico concoloribus nigricantibus, nitore viridi inconspicuo, dorso postico et uropygio brunnescentioribus; corpore toto

subtus pure albo, loris et facie laterali albidis nigro striolatis; gutturis et pectoris plumis obsolete brunneo marginatis; corporis lateralibus plumis medialiter brunneis, griseo vel albo late marginatis; subalaribus et axillaribus pure albis, his apicem versus brunneis; crissi plumis et subcaudalibus brunneo terminatis: rostro nigro, apice pallidiore; pedibus livide grisescenti-cæruleis, intus pallide carneo tinctis, palmis brunnescenti-nigris intus pallidioribus; iride coccinea. Long. tota circa 20·5, alæ 14·2, caudæ 2·6, culm. 2·95, tarsi 3·8. (Descr. spec. adulti hiemalis ex Vancouver I. Mus. Brit.)

Hab. NORTHERN PARTS OF BOTH HEMISPHERES, ranging in winter to Lower California, the Gulf of Mexico, and the Mediterranean Sea [3 4 5].—MEXICO, Valley of Mexico (*Herrera* [7 8]).

C. glacialis breeds from the Northern United States northward. In winter it is said to visit the Gulf of Mexico and Lower California. Herrera has recorded the species from the Valley of Mexico [7 8], but we have not as yet seen a specimen from Central America.

In its winter-haunts this Diver frequents the coasts and the open sea, and is not easily approached. Its great powers of diving and swimming are well known.

Fam. PODICIPEDIDÆ.

The Grebes differ from the Divers in having the hallux raised above the level of the fore toes; all the toes have scalloped webs or lateral lobes, united at the base. The tail is rudimentary. Culmen short or only moderately long, somewhat curved downwards towards the tip, straight, or occasionally slightly upturned; feathers on forehead normal; secondaries equal to, or not much shorter than, the primary quills; metatarsus considerably shorter than the middle toe and claw (*cf.* Grant, Cat. Birds Brit. Mus. xxvi. p. 502).

Three genera of Podicipedidæ are recognized by Mr. Grant (*l. c.*), all of which occur in Central America. The family is cosmopolitan in its range.

Grebes usually make their nests of decaying rushes and water-plants. The eggs are covered with a chalky-white substance, underneath which the bluish-green colour of the shell is seen; they are generally concealed by rushes cast over them by the parent birds on leaving the nest.

ÆCHMOPHORUS.

Æchmophorus, Coues, Proc. Acad. Philad. 1862, p. 229; Grant, Cat. Birds Brit. Mus. xxvi. p. 549 (1898).

In this genus the secondary quills are short, the longest being nearly equal to the ninth or tenth primary, and the metatarsus to the middle toe and claw, or a little shorter than the latter, the culmen being very long and pointed.

Two species are known, *Æ. major* and *Æ. occidentalis*. The former is an inhabitant of South, the latter of North-western America, occurring in Central America in winter.

1. Æchmophorus occidentalis.

Podiceps occidentalis, Lawr. in Baird, Cassin, & Lawr. Birds N. Amer. p. 894 [1].

Æchmophorus occidentalis, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179 [2]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 421 [3]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 1 [4]; Grant, Cat. Birds Brit. Mus. xxvi. p. 551 [5]; Oates, Cat. Eggs Brit. Mus. i. p. 138 [6].

Podiceps clarkii, Lawr. in Baird, Cassin, & Lawr. Birds N. Amer. p. 895 [7].

Æchmophorus occidentalis clarkii, Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 423 [8].

Supra brunneus, griseo marmoratus, plumis singulis griseo marginatis; pileo colloque postico saturate griseo-brunneis, crista nuchali vix evidente; facie laterali et colli lateribus, cum corpore toto subtus, sericeo-albis, corporis lateribus brunneo marmoratim maculatis; tectricibus alarum dorso concoloribus; remigibus brunneis, intus graduatim albis; secundariis albis, extus brunneo marginatis: rostro flavo, culmine et genyde virescentibus; pedibus sordide cærulescenti-viridibus, intus nigris; soleis nigris, palmis medialiter flavicanti-carneis; iride aurantiaca, coccineo tincta. Long. tota circa 22·0, alæ 7·9, culm. 2·9, tarsi 3·1. (Descr. maris adulti ex Washoe Lake. Mus. nostr.)

Hab. Western North America [1], eastward to Manitoba, south to Central Mexico [4].—Mexico, Chihuahua (*Clark* [7 8]), Valley of Mexico (*Le Strange* [5]), Chapala, Jalisco (*Richardson* [5]), Laguna de Epatlan, Puebla (*Ferrari-Perez* [2]).

This is the largest of the Central-American Grebes. Mr. Dunn says that it nests in vast numbers on Shoal Lake in Manitoba, breeding also in many other places in the Western United States. So far as we know, it is only a winter visitor to Central America.

In habits *Æ. occidentalis* resembles the rest of the family, riding lightly on the water with its neck upraised, and diving with extreme celerity. The nest, which is said to be made of bulrushes, floats on the water, but is kept, by the stems of the rooted plants to which it is fastened, from drifting away from its moorings [3].

PODICIPES.

Podiceps, Lath. Gen. Syn., Suppl. p. 294 (1787).

Podicipes, Grant, Cat. Birds Brit. Mus. xxvi. p. 502 (1898).

We have followed Mr. Grant in his classification of the Grebes and in his recognition of the extent of the genus *Podicipes*, though the variation in the shape of the bill and the form of the tippet, in addition to other features assumed by the birds during the breeding-season, have been regarded by several ornithologists as sufficient for the separation of several genera or subgenera. None of the true Grebes show the bristly feathers found in the members of the genus *Podilymbus*, nor have they such a thick bill, though in other characters they resemble them. The bill is usually long, straight, and pointed, though in a few instances upturned.

The Grebes are universally distributed, except in the extreme Arctic Regions.

1. Podicipes californicus.

Podiceps californicus, Heerman, Proc. Acad. Philad. vii. p. 179 [1]; Scl. P. Z. S. 1864, p. 179 [2]; Salv. Ibis, 1866, p. 200 [3].

Colymbus auritus (nec Linn.), Herrera, La Nat. (2) i. pp. 188 [4], 330 [5].

Podiceps auritus, var. *californicus*, Lawr. Mem. Bost. Soc. N. H. ii. p. 319 [6].

Colymbus nigricollis californicus, Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 179 [7]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 2 [8].

Dytes nigricollis californicus, Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 434 [9].

Podicipes californicus, Grant, Cat. Birds Brit. Mus. xxvi. p. 535 [10].

Proctopus californicus, Sharpe, Hand-l. Birds, i. p. 114 [11]; Oates, Cat. Eggs Brit. Mus. i. p. 136 [12].

Podyceps cornutus (nec Lath.), Dugès, La Nat. i. p. 142 [13].

Ad. in ptil. hiem. Supra nigricans, subtus sericeo-albus; facie laterali postica et gutture imo grisescentibus; corporis lateribus quoque griseo lavatis; hypochondriis nigricantioribus; primariis cinerascenti-brunneis, intimis et secundariis exterioribus albo terminatis, secundariis reliquis pure albis. Long. tota circa 11·5, alæ 5·1, culm. 1·0, tarsi 1·5. (Descr. avis adultæ ex Dueñas. Mus. nostr.)

Ptil. æstiv. Supra nigricans, subtus sericeo-albus, corporis lateribus saturate vinaceo-castaneis; pileo cristato, facie laterali, gutture et præpectore toto nigris, his vix schistaceo adumbratis; fascia lata auriculari ab oculo postico orta aureo-flava, postice aurantiaca: rostro plumbescenti-nigro, apice flavo; loris nudis coccineis; pedibus fuscis, tarso antice et postice sordide flavis; iride coccinea, intus albo marginata; palpebris grisescenti-cyaneis. Long. tota circa 11·0, alæ 5·1, culm. 1·1, tarsi 1·6. (Descr. avis adultæ ex Cubulco. Mus. nostr.)

Hab. Northern and Western North America, from the Mississippi Valley westward [8].—Mexico [10], Guaymas (*Palmer* [6 9], *Kellett & Wood* [10]), Guanajuato and Guadalajara (*Dugès* [13]), Valley of Mexico (*Herrera* [4 5], *White* [2 10]), Vera Cruz, Laguna de Epatlan, Jalapa (*Ferrari-Perez* [7]); Guatemala, Atitlan 5000 feet (*Richardson* [10]), Lake of Dueñas, Cubulco, Vera Paz (*O. S.* [3 10]).

This is the American form of the Eared Grebe of Europe, and is stated to be only a winter visitor to Central America; but specimens in full summer plumage have been obtained in the Valley of Mexico and in Guatemala, so that it is possible that the species may breed there, though at present we have no direct evidence to that effect.

The habits of *P. californicus* are similar to those of other species of the genus.

2. Podicipes dominicus.

La Grebe de rivière de S. Domingue, Briss. Orn. vi. p. 64, t. 5. fig. 2 [1].

Colymbus dominicus, Linn. Syst. Nat. i. p. 223 [2]; v. Frantzius, J. f. Orn. 1869, p. 379 [3]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 180 [4]; Zeledon, An. Mus. Nac. Costa Rica, 1887, p. 133 [5]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 2 [6].

Podiceps dominicus, Scl. P. Z. S. 1857, p. 207 [7]; 1859, p. 369 [8]; Salv. & Scl. Ibis, 1860, p. 278 [9]; Scl. & Salv. P. Z. S. 1864, p. 373 [10]; Taylor, Ibis, 1860, p. 317 [11]; Salv. P. Z. S. 1870, p. 219 [12]; Cat. Strickl. Coll. p. 635 [13]; Ibis, 1889, p. 379 [14]; Sumichr. La Nat. v. p. 234 [15]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 438 [16].

Sylbeocyclus dominicus, Lawr. Mem. Bost. Soc. N. H. ii. p. 319 [17]; Bull. U. S. Nat. Mus. no. 4, p. 52 [18].

Podiceps dominicensis, Salv. Ibis, 1866, p. 205 [19].

Podicipes dominicus, Grant, Cat. Birds Brit. Mus. xxvi. p. 520[20]; Oates, Cat. Eggs Brit. Mus. i. p. 134[21].

? *Podilymbus dominicus,* Lawr. Ann. Lyc. N. Y. ix. p. 144[22].

Supra nigricanti-brunneus, vix virescente adumbratus, pileo colloque postico magis schistaceo-nigris, virescente nitentibus; alis brunneis, primariis cinerascenti-brunneis, intus albescentibus, secundariis albis extus plus minusve brunneis; facie laterali, colli lateribus, gutture imo et præpectore sordide schistaceis; mento et gutture toto nigris; corpore reliquo subtus sericeo-albo, lateribus brunneis vix rufescente lavatis; hypochondriis imis et crisso magis cineraceis; subalaribus, axillaribus et remigibus intus pure albis: rostro nigro, apice albido; pedibus nigris, griseo tinctis; iride aurantiaca. Long. tota circa 8·0, alæ 3·5, culm. 0·85, tarsi 1·2. (Descr. feminæ adultæ æstiv. ex Coatepec. Mus. nostr.)

♂ haud a femina distinguendus. Long. tota circa 7·5, alæ 3·5. (Descr. maris adulti ex Panama. Mus. nostr.)

Ptil. hiem. ptilosi æstivæ similis, sed supra brunnescentior, nitore viridi nullo; gula albida, gutture imo et præpectore brunneis. (Descr. av. juv. ex Coban. Mus. nostr.)

Juv. adultis hiemalibus similis, sed brunnescentior, secundariis latius extus brunneis.

Hab. North America, Southern Texas[6], Lower California[6].—Mexico, Matamoros (*Berlandier*[16]), Presidio (*Forrer*[20]), Mazatlan (*Grayson*[16 17]), Tepic (*Grayson*[16], *Richardson*[20]), both coasts[15], Juchitan[18], Tehuantepec[18] (*Sumichrast*), Ixtlan (*Galeotti*[13]), Coatepec, Vera Cruz (*Ferrari-Perez*[20]), Jalapa (*Sallé*[7], *de Oca*[8], *Ferrari-Perez*[4]), Buctzotz, Yucatan, Cozumel I. (*Gaumer*[14 20]); Guatemala[20], Lake of Dueñas (*O. S.*[9 20]), Retalhuleu, Coban (*O. S. & F. D. G.*[20]); Honduras, Crater lagoon, Tigré Island (*Taylor*[11]); Costa Rica (*Endres*[20]), San José (*J. Carmiol*[20]), Naranjo de Cartago (*Zeledon*[5]), Sarapiqui River (*v. Frantzius*[3]), Dota (*F. Carmiol*[22]), Laguna de Ochomogo (*Underwood, in litt.*); Panama (*M'Leannan*[10 20]), Chitra, Castillo (*Arcé*[12 20]).—South America generally to Patagonia[20]; Greater Antilles[20].

This little Grebe has a wide range in the New World, and has been recorded as extending over a large part of South and Central America and the Greater Antilles, and as occurring also in Texas and Lower California[6 20]. Mr. F. M. Chapman has recently proposed to separate this bird from the South-American form as *Colymbus dominicus brachyrhynchus* (Bull. Amer. Mus. Nat. Hist. xii. Art. xix.). He would also distinguish the Texan bird as a separate subspecies under the name of *C. dominicus brachypterus* (*t. c.* p. 256), on account of its shorter bill and wings, the whiter underparts, and the lesser amount of fuscous colour on the sides of the body. The extent of white on the under surface of all Grebes seems to depend upon the age of the individual and the season of the year, and the greater or less amount of the fuscous colour is, in our opinion, due to the approach of the nesting-season, when adults become gradually darker below.

We agree with Mr. Chapman that the birds with the longest bills are those from San Domingo, Cuba, and Jamaica, and Mr. Oates also remarks on the larger size of the eggs of Jamaican examples as compared with those from Antioquia[21]. If, therefore, this character were confined to specimens from the Greater Antilles, it might be possible to separate them, and they would be the true *P. dominicus* of Linnæus.

Mr. Chapman gives a series of measurements to prove his points of distinction for the three geographical forms into which he divides *P. dominicus*, but our series does not bear out his conclusions. Thus, a specimen from Dueñas has a stouter and quite as long a bill as that of a typical San Domingo bird, while another example from the first-mentioned locality has it of the same size as that of a Texan bird. We have likewise a specimen from Corpus Christi which has a bill a little stouter and fully as long as the San Domingo example.

P. dominicus, considered in its wider sense, is a South-American species, which extends its range throughout our region into the Gulf States of North America. That it breeds in Central America cannot be doubted, as Grayson states that he found it abundant in all the freshwater ponds near Mazatlan and in Tepic throughout the entire year [17].

Sumichrast, too, records the species as common on both coasts of Southern Mexico and on the lakes of the interior. The series sent from Cozumel Island consisted almost entirely of young birds [14]; possibly this Grebe occurs there only on migration.

We found it quite common on the Lake of Dueñas, Guatemala, where we ultimately shot some adult birds in November [20]. At Coban its native name is "Tzunun-ok-ok."

P. dominicus is the smallest of the American Grebes usually found on still water. Like other species of the family it is an expert diver. The nest is a floating mass of wet reeds, lightly attached to the stalks of water-plants, and is similar to that of the European Little Grebe.

PODILYMBUS.

Podilymbus, Lesson, Traité d'Orn. p. 595 (1831); Grant, Cat. Birds Brit. Mus. xxvi. p. 553 (1898).

This genus agrees with *Podicipes* in the proportions of the secondary-quills and the tarsus, but has the culmen strongly curved downward towards the tip, with some bristly feathers on the forehead.

One species only is known, breeding from Temperate North America southward, and migrating to South America in winter.

1. Podilymbus podicipes.

The Pied-bill Dopchick, Catesby, Nat. Hist. Carol. i. p. 91, t. 91 [1].

Colymbus podiceps, Linn. Syst. Nat. i. p. 223 (1766) [2]; Wagler, Isis, 1831, p. 530 [3].

Podilymbus podiceps, Scl. & Salv. Ibis, 1859, p. 234 [4]; Dresser, Ibis, 1866, p. 46 [5]; Lawr. Ann. Lyc. N. Y. ix. p. 144 [6]; Dugès, La Nat. i. p. 142 [7]; Salv. P. Z. S. 1870, p. 219 [8]; Cat. Strickl. Coll. p. 635 [9]; Lawr. Mem. Bost. Soc. N. H. ii. p. 319 [10]; Sumichr. La Nat. v. p. 234 [11]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 440 [12]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 180 [13]; Herrera, La Nat. (2) i. pp. 188 [14], 330 [15]; Stone, Proc. Acad. Philad. 1890, p. 202 [16]; A. O. U. Check-l. N. Amer. Birds, 2nd ed. p. 3 [17].

Podilymbus podicipes, Grant, Cat. Birds Brit. Mus. xxvi. p. 553 [18]; Oates, Cat. Eggs Brit. Mus. i. p. 138 [19].

Podilymbus sp., Salv. Ibis, 1866, p. 200 [20].

Podilymbus antarcticus, Hartl. Naum. 1853, p. 218 [21]; Scl. P. Z. S. 1867, p. 337 [22]; Scl. & Salv. P. Z. S. 1868, p. 177 [23].

Podilymbus carolinensis (Lath.), Moore, P. Z. S. 1859, p. 65 [24].

Ptil. æstiv. Supra saturate brunneus, pileo nuchaque nigricantibus; facie laterali saturate brunnea; collo undique clariore brunneo; gutture toto nigro, lateraliter albo notato; corpore reliquo subtus saturate brunneo, vix nigricante, plumis singulis argentescenti-albo fimbriatis, pectore medio albo; remigibus brunneis, intus cinerascenti-brunneis, secundariis apices versus albidis: rostro lacteo, fascia transversa mediana nigra; tarso et digitis virescenti-schistaceis, intus plumbeis; iride læte brunnea, annulo filamentoso interiore pure albo, annulo angusto exteriore ochrascenti-albo. Long. tota circa 14·0, alæ 5·4, culm. 0·9, tarsi 1·65. (Descr. maris adulti ex Atitlan. Mus. nostr.)

♀ mari similis, sed minor.

Ptil. hiem. ptilosi æstivæ similis, sed gutture albo, corpore subtus albidiore, præpectore et corporis lateribus ochracescenti-rufo lavatis.

Juv. adultis hiemalibus similis, sed brunnescentior, facie laterali et gutture nigro striolatim notatis, et rostro tenuiore distinguendus. (Spec. av. juv. ex Dueñas. Mus. nostr.)

Hab. North America, from British Provinces southward [17].—Mexico [3], Matamoros (*Dresser* [5]), Valley of Mexico (*Sumichrast* [11], *Herrera* [14 15]), Guanajuato, Guadalajara (*Dugès* [7]), Manzanilla Bay (*Xantus* [10]), Laguna de Chapulco, Puebla (*Ferrari-Perez* [13]), Schkolak, Yucatan (*Stone & Baker* [16]); Guatemala (*Constancia* [9]), Lake of Peten (*Leyland* [24]), Lake of Atitlan (*O. S.* [18 20], *Richardson* [18]), Dueñas (*O. S. & F. D. G.* [4 19]); Panama, Castillo (*Arcé* [8 18]).—South America to Southern Brazil and Chile [18 22], Peru [23].

The Pied-billed Grebe is found in North America, from the British Provinces southward, breeding nearly throughout its range [17]. In winter it occurs in most of the Central-American countries, and southward to Brazil and Chile [18].

The species also breeds in our region, for Herrera records that it is resident in the Valley of Mexico [14]. Specimens procured both by us and Mr. Richardson on the Lake of Atitlan are very large, and have more black on the head and back of the neck, while the sides of the face are blackish-brown, with the black colour on the throat extending further down towards the front of the neck. Mr. Grant, who has carefully studied the question, and has tabulated the measurements of the large series in the British Museum, has come to the conclusion that the Atitlan birds are nearly approached in size and plumage by examples from other parts of America, and that the differences are due to age only, and in this we are inclined to agree with him. We found some nests, which were of considerable size, on the Lake of Dueñas in May: they consisted of a pile of flags heaped up so as to raise the edge of the structure above the surface of the water, the eggs being half-immersed; the latter were from two to four in number, of a chalky exterior on an under surface of bluish-green.

Order ALCÆ.

This order includes the Auks, all of which inhabit the northern oceans, where they are often to be seen in vast numbers during the nesting-season. They require but a brief notice in the present work, as only a single species has been recorded from within our limits, and even on this reported capture Mr. Grant expresses some doubt. The characters for the definition of the Auks as a separate order are given at great length in the twenty-sixth volume of the 'Catalogue of Birds.'

Fam. ALCIDÆ.

The characters for the family are the same as those of the order. Mr. Grant recognizes two subfamilies, the Auks (Alcinæ) and the Puffins (Fraterculinæ), the last-named distinguished by the absence of the feathering on the lores, which never extends so far as the posterior border of the nasal opening, the latter being overhung by a horny scale.

Subfam. *ALCINÆ*.

In this subfamily, which contains the Great Auk (*Plautus impennis*), the Guillemots (*Uria*), and the true Auks, the nostril is often all but concealed by the protrusion of the feathering of the lores, which always extends to the posterior margin of the nasal opening.

BRACHYRHAMPHUS.

Brachyrhamphus, Brandt, Bull. Acad. St. Pétersb. ii. p. 346 (1837); Grant, Cat. Birds Brit. Mus. xxvi. p. 590 (1898).

1. Brachyrhamphus brevirostris.

Uria brevirostris, Vigors, Zool. Journ. iv. p. 357 [1]; Zool. Voy. 'Blossom,' Birds, p. 32 [2].

Brachyrhamphus brevirostris, Grant, Cat. Birds Brit. Mus. xxvi. p. 593 [3]; Nelson, North American Fauna, no. 14, p. 23 [4].

Brachyrhamphus kittlitzi, Brandt, Bull. Acad. St. Pétersb. ii. p. 346 [5]; Baird, Brewer, & Ridgway, Water-Birds N. Amer. ii. p. 501 [6].

? *Guillemot*, Lawr. Mem. Bost. Soc. Nat. Hist. ii. p. 318 [7].

Supra schistaceus; scapularibus plerisque albis; alis brunneis, secundariis albo terminatis; rectricibus pure albis, his medianis tantum brunneis; pileo schistaceo; loris, superciliis ad nucham fere conjunctis, facie laterali, et corpore subtus toto, cum lateribus dorsi imi et uropygii, pure albis; colli lateribus brunneo fasciatim marmoratis, plumis singulis brunneo late marginatis. Long. tota circa 11·0, alæ 5·75, caudæ 1·8, culm. nudo 0·4, tarsi 0·6. (Descr. avis adultæ ex Kamtchatka. Mus. Brit.)

Juv. Supra schistaceus, plumis ochraceo vel sordide albo maculatim terminatis; facie laterali brunneo striata;

corpore toto subtus albido, fasciis marginalibus brunneis maculatim notato. Long. tota circa 9·5, alæ 5·2. (Descr. av. jun. typ. ex San Blas. Mus. Brit.)

Hab. W. Mexico, San Blas (*Belcher* [1 2]).—N. Pacific, Japan [3], Kamtchatka [3], Aleutian Is. [3].

This little Auk is an inhabitant of the coasts and islands of the North Pacific, being found in Japan, Kamtchatka, and thence to the Aleutian Islands. In the British Museum is a specimen said to have been obtained by Lieut. [afterwards Sir Edward] Belcher off San Blas, in Western Mexico [1]. Grayson also mentioned his having seen "Guillemots" at Isabel Island and off the Tres Marias group [7]. Mr. Nelson, during his visit to the latter islands, kept a sharp look-out for Auks or Guillemots, but without result [4].

Order CRYPTURI.

The Tinamous are exclusively Neotropical. In external form they somewhat resemble the Gallinæ, but as regards internal structure and other features they differ in a marked degree from the true Game-Birds.

The Crypturi have, until recently, been considered a distinct order belonging to the Carinatæ, since they possess a keel to the sternum, but differing from all the rest of the group in having a Struthious palate resembling that of the Ratitæ. By many naturalists, therefore, the Tinamous have been placed in the position of an intermediate link between the Struthious and the Game Birds.

Mr. Pycraft has recently made a study of them, and considers that they are certainly more nearly allied to the Struthious Birds than to the so-called Carinatæ, the structure of the palate being, in his opinion, of much greater significance than the presence or absence of a keel to the sternum. He has proposed, therefore, that the Class Aves should be divided into two great groups—the "Palæognathæ," consisting of the Struthious Birds and the Tinamous, and the "Neognathæ," to include all the remaining birds, this second group being equivalent to the Carinatæ without the Tinamous.

According to him, the Palæognathæ have the vomer and pterygoids directly connected by squamous sutures, while the palatine bones are widely separated from one another posteriorly, failing anteriorly to reach the palatine processes of the premaxilla. In the Neognathæ the vomer is often wanting, and when present it is supported by the palatines, while the pterygoids take the form of short rods, articulating anteriorly with the palatines by means of a joint.

The palate of the Crypturi is decidedly of the Palæognathous type, and is very similar to that of *Rhea*. In the character of the nestling-down the Tinamous appear to be unique. The aftershaft of the prepennæ is as large as the main shaft; preplumulæ are wanting; the definitive feathers may have a moderately large after-shaft, or this

may be quite vestigial; and the apteria are very large. In describing the pterylography of the Tinamous, the above-named author makes special mention of some curious papillæ on the jaws of the nestlings, suggesting vestiges of teeth.

The eggs of Tinamous are very remarkable, having a highly polished appearance. Their colour varies in different genera, being blue, green, purplish, or clay-colour.

Fam. TINAMIDÆ.

There is but one family of Crypturi, and its characters are therefore the same as those of the order.

Count Salvadori, who has lately monographed the Tinamidæ in the twenty-seventh volume of the 'Catalogue of Birds,' admits nine distinct genera. He divides them into two subfamilies, one of which, the Tinamotidinæ, is confined to South America.

Subfam. *TINAMINÆ*.

The seven genera composing this subfamily have a hind toe, and they are divided into two sections, distinguished by the nature of the tail-feathers. The first section only concerns our present work, but all three of the genera—*Tinamus*, *Nothocercus*, and *Crypturus*—are found in Central America.

TINAMUS.

Tinamus, Latham, Ind. Orn. ii. p. 633 (1790); Salvad. Cat. Birds Brit. Mus. xxvii. p. 496 (1895).

The tail-feathers in the genus *Tinamus* are ten in number, and they are all completely hidden by the upper tail-coverts. The hinder aspect of the tarsus is rugose, the scales being reticulated and having roughened edges. The anterior aspect is scutellate.

Three species are found within our limits, but it must be admitted that the characters for their distinction are not too strongly pronounced. It seems to us that the changes of plumage through which these birds pass from the young to the adult stage are as yet imperfectly understood, and that many of the peculiarities on which the species have been founded may ultimately prove to be due to age or season alone. The Tinamous, moreover, appear to vary in depth of colour according to their habitat.

1. Tinamus robustus.

Tinamus major (nec Gm.), Moore, P. Z. S. 1859, p. 63[1]; Scl. & Salv. Ibis, 1859, p. 226[2].

Tinamus robustus, Scl. P. Z. S. 1860, p. 253[3]; Salv. Ibis, 1861, p. 355[4]; 1866, p. 204[5]; Sumichr. La Nat. v. p. 229[6]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 500[7]; Oates, Cat. Eggs Brit. Mus. i. p. 10, t. 1. fig. 1[8].

Trachypelmus robustus, Heine & Reichen. Nomencl. Mus. Hein. p. 303[9].

Olivascenti-brunneus vix lilaceo adumbratus, plumis singulis sparsim maculis duplicibus nigris fasciatim

notatis, uropygii plumis et supracaudalibus ochraceo fimbriatis; tectricibus alarum et secundariis extus clarius olivaceo-brunneis, potius aureo-olivaceis, et eodem modo nigro fasciatim maculatis; tectricibus primariorum primariisque schistaceo-brunneis; rectricibus brunneis; pileo sordide schistaceo-nigro, frontis basi et loris cinerascentioribus; facie laterali, pilei lateribus supra-auricularibus et colli lateribus fuscis, plumis arenario-fulvo marginatis, quasi squamatis; regione parotica schistacea; gutture sordide albo, parte ima vix nigro fasciata; collo undique cineraceo-brunneo concolore, postice vix lilaceo lavato; præpectore et corpore reliquo subtus cineraceo; abdomine albicante, indistincte fusco transfasciato; hypochondriis imis et tibiis ochraceo et fusco distincte transfasciatis; subcaudalibus saturate brunneis, ochracescenti-rufo transfasciatis; tibiis schistaceis; subalaribus saturate brunneis, concoloribus, axillaribus brunneis apicem versus cineraceis; remigibus infra dimidiatis, extus brunneis, intus clare cinereis; maxilla nigricanti-olivacea, mandibula albicante; pedibus saturate olivaceis. Long. tota circa 14·5, alæ 9·5, caudæ 3·0, culm. 1·55, tarsi 2·6. (Descr. exempl. typ. ex Choctum. Mus. nostr.)

♀ mari similis, sed paullo rufescentior, hypochondriis imis et subcaudalibus ochracescenti-fulvis lateraliter brunneo fasciatim indentatis. Long. tota circa 12·5, alæ 8·8. (Descr. feminæ adultæ ex Rio de la Pasion. Mus. nostr.)

Hab. MEXICO (*Mus. Brit.*[7]), Potrero near Cordova, Etriquehuite, Omealca, near Orizaba (*Sumichrast*[6]), Orizaba (*Sallé*[3]), Playa Vicente, Vera Cruz[9]; BRITISH HONDURAS (*Blancaneaux*[7 8]), Belize (*Leyland*[1 2]); GUATEMALA[8], Choctum, Rio de la Pasion, Yzabal (*O. S. & F. D. G.*[4 7]), Sierra de las Minas (*Richardson*); HONDURAS, Omoa (*Leyland*[1 2]); NICARAGUA, Rio Coco, San Emilio (*Richardson*).

T. robustus is one of the largest of the Central-American Tinamous, and was first recorded from Omoa and Belize by Mr. F. Moore under the name of *Tinamus major*, Gm.; but it was ultimately found to be distinct from that species, which is an inhabitant of Paraguay and Southern Brazil. It was described by Dr. Sclater in 1860, the type being the specimen procured by us on the Rio de la Pasion, in Guatemala. Since that time many examples have been added to our collection, but the series is insufficient for us to follow the sequence of plumage through which this Tinamou passes, and hence it is impossible to say whether the dark- and the light-coloured birds belong to separate geographical races, or whether the variations are to be attributed to age alone.

In some specimens the black bars on the upper surface are faintly, and in others strongly, indicated; and the sprinkling of ochraceous spots over the upper portion of the body and on the wings is the only certain evidence of immaturity that we observe in this and other Tinamous. In all other respects the young birds apparently resemble adults. The single example received by us from British Honduras is paler than the Guatemalan birds. Those obtained by Mr. Richardson in Nicaragua belong undoubtedly to *T. robustus*, and not to *T. fuscipennis*, as would have been expected. In Guatemala we met with the species near Yzabal and obtained two eggs.

Leyland[1 2] states that this Tinamou was common at Omoa, and occurred more rarely at Belize. The eggs varied from eight to ten in number, and were laid in a slight depression scratched in the angles formed by the projecting buttress-like roots of the mahogany-trees. The birds were very shy, and when approached tried to conceal

themselves by hiding their heads amongst the bushes. The English mahogany-cutters called them the "Ground-Partridge."

The eggs are spheroidal in shape and of a glossy blue colour [8].

2. Tinamus fuscipennis.

Tinamus robustus (nec Scl.), Lawr. Ann. Lyc. N. Y. ix. p. 140 [1]; v. Frantz. J. f. Orn. 1869, p. 374 [2]; Zeledon, Cat. Av. Costa Rica, p. 29 [3]; Pr. U. S. Nat. Mus. 1885, p. 112 [4]; Ann. Mus. Nac. Costa Rica, 1887, p. 128 [5]; Salv. Ibis, 1874, p. 329 [6]; Richm. Pr. U. S. Nat. Mus. xvi. p. 525 [7].

Tinamus fuscipennis, Salvad. Cat. Birds Brit. Mus. xxvii. p. 500 [8].

Tinamus salvini, Underwood, Bull. B. O. C. vii. p. lix [9]; Ibis, 1898, p. 612 [10].

T. robusto similis, sed tectricibus primariorum remigibusque nigricantibus, extus brunneo lavatis: subtus olivascenti-cinereus, pectore medio arenario, minute fusco irrorato; abdomine tamen et hypochondriis imis arenario-rufis, magis distincte et latius fusco transfasciatis; subcaudalibus pallide cinnamomeis vel arenario-rufis, extus brunneo fasciatim indentatis. Long. tota circa 16·0, alæ 9·6, caudæ 2·8, culm. 1·45, tarsi 3·0. (Descr. feminæ adultæ typicæ ex San Rafael del Norte, Nicaragua. Mus. nostr.)

Juv. (*T. salvini*) adulto similis, sed supra ochraceo minute punctatus, hypochondriis tibiisque latius fasciatis; secundariis extus distincte rufo fasciatis. Long. tota 10·5, alæ 7·2. (Descr. exempl. typ. *T. salvini* ex Carrillo. Mus. nostr.)

Hab. Nicaragua, Rio Escondido (*Richmond* [7 8]), San Rafael del Norte (*Richardson* [8]); Costa Rica (*von Frantzius* [2], *Zeledon* [3 4]), San José, San Carlos (*J. Carmiol* [1]), Pozo Azul de Pirris (*Zeledon* [5]), Carrillo [9 10], Jimenez, Miravalles (*Underwood, in litt.*); Panama, Veragua (*Merritt* [6], *Arcé* [8]).—Ecuador (*Mus. Brit.*).

Count Salvadori has separated the large Tinamou of Nicaragua and Panama from the typical *T. robustus* on account of its much darker, nearly black, primaries, primary-coverts, and bastard-wing. The upper parts are also darker, the breast inclining to olive, and the abdomen is redder.

The typical specimens of *T. fuscipennis*, from which the above description is taken, are in our collection. They have the darker quills not very strongly emphasized, and some examples of *T. robustus* resemble them in this respect very closely. *T. fuscipennis* is, in fact, a slightly darker form of *T. robustus*, and is scarcely to be separated specifically. The chest, too, in some Nicaraguan examples is rather darker and browner, and not so grey as in *T. robustus*, and the pale sandy colour reaches to the lower chest. Both the Nicaraguan and Veraguan birds have pale rufous under tail-coverts, with indentations of blackish-brown, so that they appear to be less regularly barred than in *T. robustus*. This is a feature, however, which varies considerably in Tinamous, and a much larger series than those at present at our disposal is necessary before we can estimate the value of all the sequences of plumage. There is considerable variation also in the extent of vermiculation on the under surface and in the barring of the back, these markings becoming obsolete with age. The under tail-coverts, too, vary very much in pattern, doubtless from the same cause.

Our Veraguan specimen and one from the Escondido River are reddish in tint and darker than the other birds included by Count Salvadori under the heading of *T. fuscipennis*, and seem to us really more distinct from *T. fuscipennis* than the latter is from *T. robustus*.

The type of *T. salvini*, from Carrillo in Costa Rica, appears at first sight to be a fully-plumaged adult. The characters given are: the small size (wing 7·2 inches), the rufous barring on the outer webs of the secondaries, and some other slight differences in the colour of the upper breast and abdomen. All these peculiarities, however, are due to immaturity, as we have learnt from two adult specimens subsequently received from the same locality, these having the wing measuring from 9·5 to 9·7 inches in length. One of the latter birds has the breast uniform grey, and the other barred with buff as in the type of *T. salvini*.

In this pair the female is coarsely marked, the breast is of a browner shade, and the abdomen is more fulvous, while the male is decidedly greyer below and has a whiter abdomen. The black bars on the flanks and thighs, too, are more strongly marked in the female than in the male.

There are specimens from Northern Ecuador in the British Museum, collected by Messrs. Miketta and Flemming, that we cannot separate from *T. fuscipennis*.

Mr. Richmond says that this Tinamou is rather common in the forest on the Escondido River: those shot were extremely fat, the flesh being white and tender [7].

3. Tinamus castaneiceps.

Tinamus major (nec Gm.), Cass. Proc. Acad. Philad. 1860, p. 195 [1].

Tinamus robustus (nec Scl.), Lawr. Ann. Lyc. N. Y. vii. p. 477 [2]; Scl. & Salv. P. Z. S. 1864, p. 371 [3]; Salv. P. Z. S. 1867, p. 159 [4]; 1870, p. 218 [5].

Tinamus ruficeps (pt.), Scl. & Salv. Nomencl. Av. Neotr. pp. 152, 162 [6].

Tinamus castaneiceps, Salvad. Cat. Birds Brit. Mus. xxvii. p. 507, t. 6 [7]; Bangs, Auk, 1901, p. 356 [8].

T. robusto similis, sed ubique saturatior, et notæo maculis nigris crebrius fasciatim notato; pileo sordide vinaceo-castaneo distinguendus. Long. tota circa 13·0, alæ 8·8, caudæ 2·8, culm. 1·35, tarsi 2·5. (Descr. feminæ typ. ex Volcan de Chiriqui. Mus. nostr.)

Hab. Costa Rica, Pozo Azul (*Underwood*); Panama, Bugaba, Chiriqui [5 7], Santiago de Veragua [4] (*Arcé*), Divala (*Brown* [8]), Lion Hill (*M'Leannan* [2 3 7]).—Colombia, Rio Truando (*Wood* [1]).

Count Salvadori [7] has separated the Red-headed Tinamou of Panama from the southern *T. ruficeps*, on account of its darker chestnut crown, blackish ear-coverts, and darker greyish-olive flanks. We have specimens from several places in Panama, and Mr. Bangs has received seven examples, including both sexes, from Divala, shot in November and December [8]. It occurs also in Costa Rica, as we have received

a specimen from Mr. Underwood procured at Pozo Azul on the 22nd of February, 1898.

T. castaneiceps is scarcely separable from *T. ruficeps*, but is recognizable from *T. robustus* by its darker coloration, and especially by the greater number and closer distribution of the black bars on the upper surface. The head is, moreover, of a deep vinous chestnut colour, while in *T. robustus* it is slaty-black and the forehead is grey. The sides of the back of the crown and the sides of the neck are also of a deep sandy-buff colour, with numerous black bars, all of a darker shade than in the last-mentioned species.

Lieut. Wood states that this bird was heard near the first range of the Cordilleras, on the Rio Truando [1]. It had a very loud continued note, not inappropriately compared by the members of the expedition to the whistle of a locomotive engine.

The eggs of the closely allied species, *T. ruficeps*, are blue.

NOTHOCERCUS.

Nothocercus, Bp. C. R. xlii. p. 957 (1856); Salvad. Cat. Birds Brit. Mus. xxvii. p. 509 (1895).

Nothocercus resembles *Tinamus* in possessing ten tail-feathers, hidden by the upper tail-coverts, and also in having the hinder aspect of the tarsus rough; but the scales on the hinder aspect of the tarsus are not prominent on the upper margin, and the toes, especially the middle one, are lengthened (*cf.* Salvadori, *t. c.* p. 496).

Five species are known, four of which are South-American, while one, *N. frantzii*, is the Central-American representative of the genus.

1. **Nothocercus frantzii.** (*Nothocercus bonapartii*, Tab. LXXVIII.)

Tinamus frantzii, Lawr. Ann. Lyc. N. Y. ix. p. 140 [1]; v. Frantzius, J. f. Orn. 1869, p. 374 [2]; Salv. Ibis, 1874, p. 312 [3].

Nothocercus frantzii, Salvad. Cat. Birds Brit. Mus. xxvii. p. 512 [4]; Oates, Cat. Eggs Brit. Mus. i. p. 11 [5].

Nothocercus bonapartii (nec Gray), Boucard, P. Z. S. 1878, p. 41 [6]; Zeledon, An. Mus. Nac. Costa Rica, p. 128 [7].

Tinamus nigricapillus, pt. (nec Gray), Schl. Mus. Pays-Bas, Tinami, p. 17 [8].

Supra obscure brunneus, vix olivascens, indistincte lineis transversis fuscis irroratus; alis ochracescentioribns, tectricibus fusco irregulariter transfasciatis et maculis parvis ochraceis ornatis; remigibus intus fuscis, extus nigro et rufescenti-fulvo transfasciatis et nigro marmoratis; supracaudalibus plumosis, dorso concoloribus, et maculis minutis albidis ornatis; pileo saturate plumbescenti-cinereo, loris et facie laterali vix pallidioribus; collo postico et laterali sordide castaneo-rufis; genis et gula rufescenti-ochraceis; gutture imo et præpectore rufescentibus, fasciis paucis nigricantibus et fulvis variegatis; pectore concolore rufescenti-ochraceo; abdomine medio pallidiore; corporis lateribus brunnescentioribus, olivaceo lavatis, fasciis ochraceis et nigris, maculis parvis ochraceis ornatis; subcaudalibus hypochondriis concoloribus, sed latius ochraceo fasciatis; subalaribus vix rufescentioribus et modo pectorali irroratis, majoribus tamen et remigibus intus cinerascentibus: maxilla nigra, mandibula fuscescenti-flava; pedibus sordide carneo-brunneis. Long. tota circa 13·0, alæ 8·2, caudæ 2·0, culm. 1·4, tarsi 2·35. (Descr. feminæ adultæ ex Irazu. Mus. nostr.)

Jun. præcedenti similis, sed alis crebrius fasciis et maculis ochracescentibus notatis, et pectore fasciis fuscis indistinctis ornato, abdomine et tibiis magis distincte fusco fasciatis. (Descr. exempl. forsan junioris ex Costa Rica. Mus. nostr.)

Hab. Costa Rica [3 4 8], Cervantes (*Zeledon* [1], *v. Frantzius* [2]), Irazu (*Rogers* [4]), Faldas del Irazu (*Zeledon* [7]), Rio Navarro, foot of the Candelaria Mts. (*Boucard* [6]), Aseni, Achiote de Poas, Estrella de Cartago (*Underwood, in litt.*); Panama (*mus. nostr.*[4]).

Von Frantzius's Tinamou is allied to *N. bonapartii* of Venezuela and Colombia; but, according to Count Salvadori [4], it may be distinguished by the colour of the greater under wing-coverts. In *N. bonapartii* these are greyish, barred with dull rufous, whereas in *N. frantzii* they are uniformly greyish-brown, without bars, and the inner webs of the primaries are not distinctly rufous, but are greyish, freckled with irregular narrow bars of rufous [4].

N. frantzii was originally described from specimens obtained at Cervantes in Costa Rica [1], from which country we have received several examples.

The only note published on the habits of this bird is one by M. Boucard:—"Like all the Tinamidæ, this species is found in the dense parts of the forest, where it feeds on insects and seeds. The birds can be easily detected by the noise they make when scratching the ground in search of food. They go in pairs, repeatedly calling to one another. When fearing danger they run with much rapidity" [6].

Two eggs, attributed to *N. frantzii* by Mr. Oates [5], are of a darker blue than those of any species of *Tinamus*.

CRYPTURUS.

Crypturus, Illiger, Prodr. Mamm. et Av. p. 244 (1811); Salvad. Cat. Birds Brit. Mus. xxvii. p. 514 (1895).

Crypturus agrees with the two preceding genera in its general characteristics, viz. the possession of a hind toe, and ten tail-feathers all hidden by the tail-coverts; but is distinguished at once by the smooth hinder aspect of the tarsus.

The species, as determined by Count Salvadori (*l. c.*), number twenty-two, of which the majority are found in South America. Seven are enumerated in the present work as Central American, but some of these are probably not really distinct.

1. Crypturus meserythrus.

Tinamus meserythrus, Scl. P. Z. S. 1859, p. 392 [1]; Scl. & Salv. P. Z. S. 1864, p. 371 [2].
Crypturus meserythrus, Salv. P. Z. S. 1870, p. 218 [3].
Tinamus pileatus (nec Bodd.), Lawr. Ann. Lyc. N. Y. vii. p. 334 [4].
Crypturus pileatus, Nutting, Pr. U. S. Nat. Mus. v. p. 409 [5]; Zeledon, An. Mus. Nac. Costa Rica, p. 128 [6]; Richm. Pr. U. S. Nat. Mus. xvi. p. 525 [7]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 522 [8]; Oates, Cat. Eggs Brit. Mus. i. p. 12 [9].

Crypturus modestus, Cab. J. f. Orn. 1869, p. 212 [10]; v. Frantz. J. f. Orn. 1869, p. 374 [11].
Crypturus soui modestus, Bangs, Pr. New Engl. Zool. Club, ii. p. 14 [12]; Auk, 1901, pp. 25 [13], 356 [14].

Supra sordide rufescenti-brunneus, plumis singulis sub certa luce fusco indistincte marginatis; tectricibus alarum dorso concoloribus, extimis saturate cinerascenti-brunneis, majoribus et secundariis intimis rufo marginatis et terminatis; remigibus saturate cinerascenti-brunneis; rectricibus celatis cinerascenti-brunneis rufo marginatis et terminatis; pileo et nucha sordide cinerascentibus; fronte, loris et facie laterali potius schistaceis; gutture albicante, vix rufo lavato; corpore reliquo subtus castaneo, abdomine imo et subcaudalibus cinnamomeo-fulvis; gutture imo et præpectore summo et corporis lateribus cinerascenti-brunneis, rufo adumbratis; subalaribus et axillaribus cinerascenti-brunneis, margine alari et tectricibus subalaribus juxta positis saturatioribus; tectricibus majoribus et remigibus intus clarius cineraceis: maxilla brunnea, mandibula grisea; pedibus olivaceo-griseis; iride pallide grisea. Long. tota circa 9·0, alæ 5·45, caudæ 1·7, culm. 0·9, tarsi 1·5. (Descr. feminæ adultæ, exempl. typ. *T. meserythri*, ex Playa Vicente. Mus. nostr.)

Juv. Chocolatino-brunneus, dorso postico, uropygio et supracaudalibus rufescentioribus, his anguste cinnamomeo-rufo limbatis; alis sepiariis, tectricibus interioribus dorso concoloribus, majoribus arenario marginatis, his et secundariis intimis minutissime irroratis; pileo fuscescenti-plumbeo-brunneo, pilei lateribus et facie laterali magis schistaceis; gula alba; corpore reliquo ochraceo-cervino; gutture imo, præpectore et corporis lateribus sordide chocolatinis, illis schistaceo vix adumbratis; tibiis et hypochondriis imis brunneis, ochraceo lavatis et ochraceo-cervino marginatis, quasi fasciatis; subcaudalibus læte castaneis; subalaribus et alis intus cinerascentibus. Long. tota circa 7·5, alæ 4·9. (Descr. feminæ junioris ex Biballa. Mus. nostr.)

Hab. Mexico [8], Playa Vicente (*Boucard* [1 8]); Guatemala, Choctum (*O. S.* [8 9]); Nicaragua, Escondido River (*Richmond* [7 8]), San Emilio, Santo Domingo, Chontales [8] (*Richardson*); Costa Rica (*v. Frantzius* [10 11]), Las Trojas, Pozo Azul de Pirris, Naranjo de Cartago, Jimenez (*Zeledon* [6], *Underwood*), La Palma, Gulf of Nicoya (*Nutting* [5]); Panama, Lion Hill (*M'Leannan* [2 4 8 9], *Brown* [12]), Divala, Chiriqui (*Arcé* [3], *Brown* [14]), Santa Fé [8], Chitra [3], Chepo [8] (*Arcé*), San Miguel I. (*Brown* [13]).—Colombia, Cauca Valley (*Salmon*).

In the 'Catalogue of Birds,' Count Salvadori has given the range of *C. pileatus* as extending from Guiana to Brazil, Bolivia, Peru, Ecuador, Colombia, and Central America to Mexico [8]. From an examination of the series in our collection, however, we cannot follow our distinguished colleague in this identification, and we contend that there are at least three species within the area which he has apportioned to one form.

The true *C. pileatus* should bear the name of *C. soui* (Hermann), which takes precedence over that of *C. pileatus* (Bodd.) [*cf.* Richmond, Auk, 1900, p. 179]. The Guiana species is of a vinous-chestnut tint above, with the sides of the body similarly coloured; the lower breast and abdomen are cinnamon, and the lower part of the throat and front of the neck are not shaded with ashy-brown. Length about 9·0, wing 5·25, tail 1·3, culmen 0·9, tarsus 1·4. These are the characters of *C. soui*, as shown in a female specimen from Bartica Grove, procured by the late Henry Whitely on the 24th of January, 1880. We also have the true *C. soui* from the Sierra Nevada of Santa Marta, where an example was obtained by Mr. F. Simons at Pueblo Viejo.

In the birds from Brazil, Amazonia, Ecuador, and Colombia, from all of which countries we have specimens before us, the general colour is browner, and less rufous on the under surface; the flank-feathers which overhang the tail are brown or rufous-brown, but never so chestnut as in *C. meserythrus* or *C. soui*; the head is light ashy-brown, and the front of the neck is brownish and lighter than in *C. meserythrus*.

The third form, *C. meserythrus*, which is Central-American, is again different, being very rufous below, and having the flank-feathers overhangiug the tail deep chestnut, in this character resembling *C. soui*, but differing in the ashy-brown tint of the chest. Birds from Chiriqui are very dark in colour, and Mr. Bangs describes his series from Divala as extreme examples of this race, with dark greyish throat and a conspicuous dark band across the breast [12].

2. Crypturus cinnamomeus.

Tinamus (*Nothura*) *cinnamomea*, Less. Rev. Zool. 1842, p. 210 [1].

Tinamus cinnamomeus, Scl. & Salv. Ibis, 1859, p. 226 [2].

Crypturus cinnamomeus, Salvad. Cat. Birds Brit. Mus. xxvii. p. 541 [3]; Chapman, Bull. Amer. Mus. Nat. Hist. x. p. 36 [4].

Tinamus delattrii, Bp. C. R. xxxviii. p. 663 [5].

Nothocercus sallæi, Bp. C. R. xlii. p. 881 [6]; Scl. P. Z. S. 1856, p. 310 [7]; Lawr. Bull. U. S. Nat. Mus. no. 4, p. 45 [8].

Tinamus sallæi, Scl. P. Z. S. 1859, pp. 369 [9], 392 [10]; Salv. Ibis, 1866, p. 206 [11]; Sumichr. La Nat. v. p. 229 [12].

Crypturus sallæi, Lawr. Ann. Lyc. N. Y. ix. p. 141 [13]; v. Frantz. J. f. Orn. 1869, p. 374 [14]; Nutting, Pr. U. S. Nat. Mus. v. p. 409 [15]; Ferrari-Perez, Pr. U. S. Nat. Mus. ix. p. 180 [16].

Supra brunneus, regulariter nigro transfasciatus; scapularibus, tectricibus alarum, secundariis intimis, supracaudalibus et rectricibus albido vel ochracescenti-fulvo fasciatis et terminatis, tectricibus alarum majoribus et interioribus cum secundariis intimis nigro irroratis et subterminaliter nigro notatis; interscapulio et colli lateribus sordide cinerascentibus; pileo antico sordide schistaceo; supercilio, facie laterali et collo postico sordide vinaceo-castaneis; gula alba; gutture imo et præpectore summo sordide schistaceis; præpectore imo et pectore cervinis, abdomine albicantiore; corporis lateribus et tibiis pallide cervinis nigro late transfasciatis; subcaudalibus pallide arenario-fulvis, basaliter nigro vermiculatis; subalaribus et alis intus cinerascentibus: maxilla brunnescente, mandibula pallidiore; pedibus rubris; iride coryllina. Long. tota circa 11·5, alæ 6·3, caudæ 1·6, culm. 1·1, tarsi 1·8. (Descr. maris adulti ex Volcan de Agua. Mus. nostr.)

♀. Supra ubique nigro transfasciatus; pileo et collo postico et laterali sordide vinaceo-castaneis nigro fasciatis; interscapulio sordidiore, minus distincte transfasciato; facie laterali vinaceo-castaneo concolore; gula alba; corpore reliquo subtus cinnamomeo-rufo, abdomine et tibiis posticis arenariis; gutture imo et præpectore summo et laterali obscurioribus, nigro transfasciatis; pectoris plumis rufo indistincte marginatis; corporis lateribus late nigro transfasciatis; subcaudalibus rufescente et nigro fasciatis; alis intus cineraceis. Long. tota circa 11·0, alæ 6·4, caudæ 1·6, culm. 1·3, tarsi 1·85. (Descr. feminæ adultæ ex Costa Grande. Mus. nostr.)

Hab. Mexico, Vera Cruz, Cordova (*Sallé* [3 7]), Playa Vicente (*Boucard* [10]), Atoyac (*H. H. Smith* [3]), Jalapa (*de Oca* [9], *Ferrari-Perez* [16], *Chapman* [4]), Plan del Rio (*Ferrari-Perez* [3]), Coatepec (*Trujillo* [3]), Potrero, Omealca, Santa Efigenia [8], Tapanatepec, Cacoprieto, Tonala (*Sumichrast* [12]); Guatemala, Chisec (*O. S.* [11]),

Barranco Hondo, Medio Monte, Volcan de Agua, Zapote, Costa Grande (*O. S. & F. D. G.*[3]); Salvador, La Union (*Lesson*[1 2]), La Libertad, Volcan de San Miguel (*Richardson*[3]); Honduras (*Dyson*[3]); Nicaragua[5], Leon, El Volcan, Chinandega (*Richardson*[3]); Costa Rica, Bebedero (*Arcé*[3]), San José[13], Esparza[14] (*v. Frantzius*), La Palma, Gulf of Nicoya (*Nutting*[15]).

The type of this species was obtained at La Union in Salvador, and there are specimens in our collection from the same country. We have here followed Count Salvadori in his identifications in the 'Catalogue of Birds,' as his conclusions are founded on our series, the whole of which was placed at his disposal for study in Turin; it is possible, however, that the birds from Tehuantepec, whence we have no examples, will prove to belong to *C. occidentalis*.

In Guatemala the present species was found only on the slopes of the mountains in the hot country bordering the Pacific Ocean. In Costa Rica it is scarce in the Gulf of Nicoya, occurring in the thick forests, living on the ground. Sumichrast says that in Tehuantepec the species is never found on the plains[8].

3. Crypturus goldmani.

Crypturus sallæi (nec Scl.), Salv. Ibis, 1874, p. 328[1]; Boucard, P. Z. S. 1883, p. 462[2].

Crypturus sallæi goldmanni, Nelson, Proc. Biol. Soc. Washington, xiv. p. 169[3].

Crypturus cinnamomeus, pt., Salvad. Cat. Birds Brit. Mus. xxvii. p. 541[4]; Oates, Cat. Eggs Brit. Mus. i. p. 12, t. 1. fig. 2[5].

C. cinnamomeo similis, sed subtus pallidior, dilutius cervinus, fasciis alarum ochraceis crebrioribus. Long. tota circa 9·0, alæ 5·8, caudæ 1·8, culm. 1·0, tarsi 1·6. (Descr. exempl. ad. ex N. Yucatan. Mus. nostr.)

Hab. Mexico, Yucatan[2] (*Cabot*[1]), Izamal, Peto, Buctzotz (*Gaumer*[4]), Chichen-Itza (*Nelson & Goldman*[3]).

C. goldmani may be regarded as a pale race of *C. cinnamomeus*. Various examples in our series of the latter, especially one from Chinandega, approach it very closely, and it seems possible that a complete connection between the two forms will be found.

The Yucatan bird is described as being smaller than the typical *C. sallæi* (i. e. *C. cinnamomeus*), paler in colour, and greyer on the back, the light transverse bars are more strongly marked, extending further forward on the back and wing, and the underparts are less rufous.

The female is paler than the male, and more obviously and extensively barred with lighter colour on the back and wings. In the dry season *C. goldmani* is met with in great numbers at the "aguadas" and along the roadsides during the heat of the day, seldom taking wing unless hard pressed. This Tinamou may be found domesticated in many houses, where it is said to rid the premises of the dreaded "Alacranes" (scorpions)[2].

The egg is of a pinkish stone-colour[5].

4. Crypturus boucardi.

Tinamus boucardi, Scl. P. Z. S. 1859, p. 391 [1]; Sumichr. La Nat. v. p. 229 [2].

Crypturus boucardi, Salv. Ibis, 1870, p. 115 [3]; Scl. & Salv. P. Z. S. 1870, p. 838 [4]; Boucard, P. Z. S. 1878, p. 41 [5]; Zeledon, An. Mus. Costa Rica, p. 128 [6]; Salvad. Cat. Birds Brit. Mus. xxvii. p. 544 [7]; Underwood, Ibis, 1896, p. 449 [8].

Nothocercus boucardi, Heine & Reichenow, Nomencl. Mus. Hein. p. 304 [9].

Tinamus sallæi (nec Bp.), Salv. Ibis, 1861, p. 356 [10].

Crypturus sp., Richmond, Pr. U. S. Nat. Mus. xvi. p. 526 [11].

Supra rufescenti-brunneus, plumis singulis fusco indistincte marginatis; pileo sordide schistaceo; collo postico et laterali cum interscapulio toto saturate plumbeis; tectricibus alarum cinerascenti-brunneis, medianis indistincte arenario terminatis, majoribus ochraceo apicatis et nigro subterminaliter notatis; remigibus fuscescenti-cinerascenti-brunneis; secundariis intimis dorso concoloribus, exterioribus sordide arenario marmoratis: subtus plumbescenti-cinereus, mento albicante; abdomine medio isabellino; hypochondriis imis et subcaudalibus ochraceo nigroque transfasciatis; subalaribus plumbeis; alis intus cineraceis. Long. tota circa 10·0, alæ 6·6, caudæ 1·7, culm. 1·15, tarsi 2·0. (Descr. exempl. typ. maris adulti ex Teotalcingo. Mus. nostr.)

♀. Supra marmoratus, dorso chocolatino, interscapulio concolore, sed dorso postico, uropygio et supracaudalibus nigro et ochracescenti-fulvo transfasciatis, his magis conspicue notatis; tectricibus alarum et secundariis extus ochracescenti-fulvo crebre fasciatis. Long. tota circa 10·5, alæ 6·9. (Descr. feminæ adultæ ex Rio Coco. Mus. nostr.)

Hab. S. Mexico, Vera Cruz, Playa Vicente, Teotalcingo (*Boucard* [1 7]), Uvera (*Sumichrast* [2]), Chimalapa, Tehuantepec (*Richardson* [7]); British Honduras (*Blancaneaux* [7]); Guatemala [9], Chisec [10], Choctum [7] (*O. S.*); Honduras, San Pedro (*Whitely* [4]); Nicaragua, Rio Escondido (*Richmond* [11]), Rio Coco (*Richardson*); Costa Rica [3], San Carlos (*Boucard* [5]), Pacuare (*Zeledon* [6]), Miravalles (*Underwood* [8]).

The uniformly grey throat and breast, combined with the leaden-black colour of the head and neck, serve to distinguish this Tinamou. The upper part of the throat is light grey in the typical bird from Mexico, but is decidedly whiter in those from Nicaragua.

A specimen from Miravalles, Costa Rica, is quite as dark as the Mexican examples, but has a slightly whiter throat. It is therefore somewhat intermediate, resembling in this respect one of our Chisec skins. The two palest birds are from British Honduras, but, judging from our series, every gradation of tint is illustrated, and we can scarcely believe in the existence of any distinct races. M. Boucard found this Tinamou abundant near San Carlos, in Costa Rica, in February. The flesh is described as white and of excellent flavour.

5. Crypturus mexicanus. (Tab. LXXIX. figg. 1, ♂; 2, ♀.)

Crypturus mexicanus, Salvad. Cat. Birds Brit. Mus. xxvii. p. 545 [1]; Richmond, Pr. U. S. Nat. Mus. xviii. p. 627 [2]; Nelson, Auk, xvii. p. 254 [3].

C. boucardi similis, sed subtus pallidior, dorso postico, scapularibus, supracaudalibus et secundariis intimis regulariter nigro transfasciatis; gula alba; gutture imo schistaceo; corpore reliquo subtus ochracescenti-

fulvo, pectore minime schistaceo; hypochondriis imis lateralibus et subcaudalibus albicantibus, nigro distincte transfasciatis. Long. tota circa 11·0, alæ 6·9, caudæ 2·0, culm. 1·2, tarsi 1·9. (Descr. maris adulti ex Tampico. Mus. nostr.)

♀ mari similis, sed supra fasciis crebrioribus pallidioribus ochraceis, hypochondriis et abdomine imo nigro distincte fasciatis distinguendus. Long. tota circa 10·5, alæ 6·6. (Descr. feminæ adultæ ex Tampico. Mus. nostr.)

Hab. N.E. Mexico, Tampico, Tamaulipas, Sierra Madre (*Richardson* [1]), Alta Mira (*Armstrong* [2]), Hacienda de los Atlixcos, Monte Verde (*F. D. G.* [1]).

C. mexicanus was described from specimens in our collection. It has a uniformly coloured breast, as in *C. boucardi*, with a very conspicuous white throat, shaded with grey below, the tint of the breast is ochraceous, and the lower abdomen is white, slightly barred with black, as are also the lower flanks. The upper surface, too, is more distinctly brown than in *C. boucardi*.

This species inhabits low scrubby thickets or arid tropical districts, and both it and *C. occidentalis* may be distinguished from the other Mexican Tinamous by their paler colour [3].

6. Crypturus inornatus.

Crypturus inornatus, Nelson, Auk, xvii. pp. 253 [1], 254 [2].

C. mexicano similis, sed supra saturate rufescenti-brunneus, notæi fasciis haud distincte indicatis; corpore subtus rufescentiore. (Descr. ex script. Nelson.)

♀ mari similis, sed saturatior, et notæo gastræoque magis rufescenti-brunneis.

Hab. S.E. Mexico, Northern Vera Cruz and Puebla, Metlaltoyuca (*Nelson* [1]).

C. inornatus is not represented in our collection, and we are therefore unable to judge of the validity of the species. It is said to be most nearly allied to *C. mexicanus*, from which the males may be distinguished by their deep reddish-brown colour and the absence of black bars on the wings and fore part of the back and the more rufous underparts; the females are much darker, and are reddish-brown above and below. The darker back and brighter-coloured nape and neck of *C. inornatus* suffice to distinguish it [1].

The habitat is said to be the dense, humid, tropical forests of Northern Vera Cruz and the adjacent parts of Puebla.

Mr. Nelson remarks that the general resemblance of *C. mexicanus* of Tamaulipas, in Eastern Mexico, to *C. occidentalis* of Tepic, on the opposite side of the continent, but living in similar climatic conditions, is much greater than that of *C. mexicanus* to *C. inornatus*, living in contiguous districts, but with marked climatic differences.

7. Crypturus occidentalis.

? *Nothocercus sallæi* (nec Bp.), Lawr. Mem. Bost. Soc. N. H. ii. p. 307 [1].

Crypturus occidentalis, Salvad. Cat. Birds Brit. Mus. xxvii. p. 546 [2]; Nelson, Auk, xvii. p. 254 [3].

C. boucardi similis, sed ubique pallidior, supra cinerascens, dorso postico, uropygio et supracaudalibus rufescenti-

brunneis, fasciis transversalibus nigris vix distinctis; secundariis extus arenario et nigro fasciatis; corpore subtus ut in *C. boucardi* colorato. Long. tota circa 10·5, alæ 6·6, caudæ 1·6, culm. 1·0, tarsi 1·7. (Descr. maris adulti typici ex San Blas. Mus. nostr.)

Hab. W. Mexico, San Blas, Tepic (*Richardson* [2]), Mazatlan (*Grayson* [1]).

This is a western form of *C. cinnamomeus*, or rather of *C. mexicanus*, but is distinguishable by its greyish breast. The flanks are rufescent, with bars of brown, the upper surface being very faintly marked with wavy blackish bars on the lower back, rump, and upper tail-coverts, while the vermiculations on the wing-coverts are almost obsolete. The back of the neck and mantle are plumbeous brown, and the front of the neck and breast are shaded with grey, the throat being pure white.

The type-specimen is probably not quite adult, as there are several spots of bright ochre on the greater coverts and secondaries. Mr. Nelson, however, confirms the distinctness of *C. occidentalis*, which he says inhabits low scrubby thickets of arid tropical districts.

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